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(FILE 'HOME' ENTERED AT 08:30:43 ON 01 NOV 2004)

[redacted]' ENTERED AT 08:30:55 ON 01 NOV 2004
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FILE 'REGISTRY' ENTERED AT 08:31:20 ON 01 NOV 2004

FILE 'HCAPLUS' ENTERED AT 08:31:23 ON 01 NOV 2004
L2 TRA L1 1- RN : 11 TERMS

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FILE COVERS 1907 - 1 Nov 2004 VOL 141 ISS 19
FILE LAST UPDATED: 31 Oct 2004 (20041031/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

[redacted]

L1 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:376823 HCAPLUS
DN 138:365147
ED Entered STN: 16 May 2003
TI Compositions, methods and kits pertaining to luminescent compounds
IN Wood, Keith; Hawkins, Erika; Scurria, Mike; Klaubert, Dieter
PA Promega Corporation, USA
SO PCT Int. Appl., 60 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C07D211-70
ICS C07D241-02; C07D413-00; C12N009-02; C12Q001-34; C12Q001-66;
G01N033-53
CC 9-14 (Biochemical Methods)
Section cross-reference(s): 80
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003040100	A1	20030515	WO 2002-US34972	20021101
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	US 2003153090	A1	20030814	US 2001-53482	20011102 <--

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     EP 1451155          A1    20040901    EP 2002-802815         20021101
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             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK
PRAI US 2001-53482       A     20011102
     WO 2002-US34972     W     20021101
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
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 WO 2003040100   ICM    C07D211-70
                 ICS    C07D241-02; C07D413-00; C12N009-02; C12Q001-34;
                        C12Q001-66; G01N033-53
OS   MARPAT 138:365147
AB   A method of measuring the enzymic activity of a luciferase includes
     contacting a luminogenic protein, such as a luciferase, with a protected
     luminophore to form a composition; and detecting light produced from the composition
     The protected luminophore provides increased stability and improved
     signal-to-background ratios relative to the corresponding unmodified
     coelenterazine.
ST   compn kit pertaining luminescent compd protein
IT   Cell
     Luminescent substances
        (compns., methods and kits pertaining to luminescent compds.)
IT   Proteins
     RL: ARU (Analytical role, unclassified); ANST (Analytical study)
        (luminogenic; compns., methods and kits pertaining to luminescent
        compds.)
IT   61869-41-8, Renilla luciferase
     RL: ARU (Analytical role, unclassified); ANST (Analytical study)
        (compns., methods and kits pertaining to luminescent compds.)
IT   50909-86-9P   55779-48-1P   65417-16-5P   70217-82-2P   524066-91-9P
     524066-92-0P   524066-93-1P   524066-94-2P   524066-95-3P   524066-96-4P
     RL: ARU (Analytical role, unclassified); SPN (Synthetic preparation); ANST
     (Analytical study); PREP (Preparation)
        (compns., methods and kits pertaining to luminescent compds.)
RE.CNT  8     THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bryan; US 6416960 B1 2002 HCAPLUS
(2) Garini; US 6165734 A 2000 HCAPLUS
(3) Hideshi, N; Journal American Chem Society 2001, V123, P1523
(4) Inouye, S; Biochemical and Biophysical Research Communications 1997, V233,
    P349 HCAPLUS
(5) Jones, K; Trends in Biotechnology 1999, V17, P477 HCAPLUS
(6) Roelant; US 6171809 B1 2001 HCAPLUS
(7) Shimomura, O; Biochemistry Journal 1989, V261, P913 HCAPLUS
(8) Shimomura, O; Biochemistry Journal 1995, V306, P537 HCAPLUS


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STRUCTURE FILE UPDATES:   29 OCT 2004  HIGHEST RN 772333-32-1
DICTIONARY FILE UPDATES:  29 OCT 2004  HIGHEST RN 772333-32-1

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

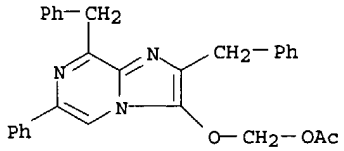
Crossover limits have been increased.  See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
http://www.cas.org/ONLINE/DBSS/registryss.html

[redacted]

L3   ANSWER 1 OF 11  REGISTRY  COPYRIGHT 2004 ACS on STN
RN   524066-96-4  REGISTRY
CN   Methanol, [[6-phenyl-2,8-bis(phenylmethyl)imidazo[1,2-a]pyrazin-3-yl]oxy]-
```

, acetate (ester) (9CI) (CA INDEX NAME)
FS 3D CONCORD
MF C29 H25 N3 O3
SR CA
LC STN Files: CA, CAPLUS, USPATFULL
DT.CA CAplus document type: Patent
RL.P Roles from patents: ANST (Analytical study); PREP (Preparation)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

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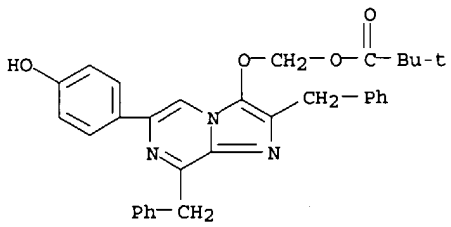
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 2 OF 11 REGISTRY COPYRIGHT 2004 ACS on STN
RN **524066-95-3** REGISTRY
CN Propanoic acid, 2,2-dimethyl-, [[6-(4-hydroxyphenyl)-2,8-bis(phenylmethyl)imidazo[1,2-a]pyrazin-3-yl]oxy]methyl ester (9CI) (CA INDEX NAME)
FS 3D CONCORD
MF C32 H31 N3 O4
SR CA
LC STN Files: CA, CAPLUS, USPATFULL
DT.CA CAplus document type: Conference; Patent
RL.P Roles from patents: ANST (Analytical study); PREP (Preparation)
RLD.NP Roles for non-specific derivatives from non-patents: BIOL (Biological study); USES (Uses)



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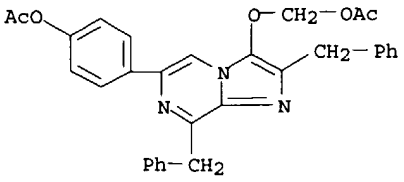
2 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
2 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 3 OF 11 REGISTRY COPYRIGHT 2004 ACS on STN
RN **524066-94-2** REGISTRY
CN Phenol, 4-[3-[(acetyloxy)methoxy]-2,8-bis(phenylmethyl)imidazo[1,2-a]pyrazin-6-yl]-, acetate (ester) (9CI) (CA INDEX NAME)
FS 3D CONCORD
MF C31 H27 N3 O5
SR CA
LC STN Files: CA, CAPLUS, USPATFULL
DT.CA CAplus document type: Patent
RL.P Roles from patents: ANST (Analytical study); PREP (Preparation)



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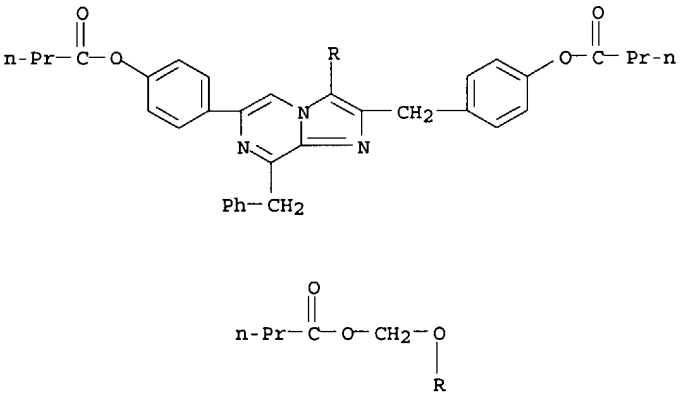
1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 4 OF 11 REGISTRY COPYRIGHT 2004 ACS on STN
RN **524066-93-1** REGISTRY
CN Butanoic acid, 4-[3-[(1-oxobutoxy)methoxy]-2-[[4-(1-oxobutoxy)phenyl]methyl]-8-(phenylmethyl)imidazo[1,2-a]pyrazin-6-yl]phenyl ester (9CI) (CA INDEX NAME)
FS 3D CONCORD
MF C39 H41 N3 O7
SR CA
LC STN Files: CA, CAPLUS, USPATFULL
DT.CA CAplus document type: Patent
RL.P Roles from patents: ANST (Analytical study); PREP (Preparation)



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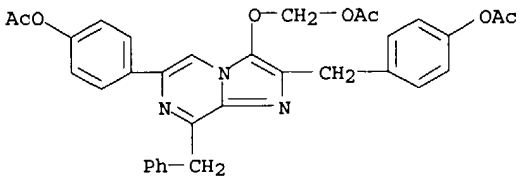
1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 5 OF 11 REGISTRY COPYRIGHT 2004 ACS on STN
RN **524066-92-0** REGISTRY
CN Phenol, 4-[3-[(acetyloxy)methoxy]-2-[[4-(acetyloxy)phenyl]methyl]-8-(phenylmethyl)imidazo[1,2-a]pyrazin-6-yl]-, acetate (ester) (9CI) (CA INDEX NAME)
FS 3D CONCORD
MF C33 H29 N3 O7
SR CA
LC STN Files: CA, CAPLUS, USPATFULL
DT.CA CAplus document type: Patent
RL.P Roles from patents: ANST (Analytical study); PREP (Preparation)



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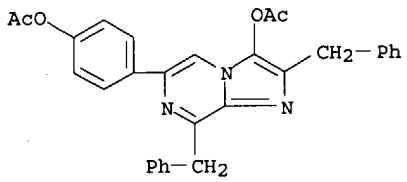
1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 6 OF 11 REGISTRY COPYRIGHT 2004 ACS on STN
RN **524066-91-9** REGISTRY
CN Imidazo[1,2-a]pyrazin-3-ol, 6-[4-(acetyloxy)phenyl]-2,8-bis(phenylmethyl)-, acetate (ester) (9CI) (CA INDEX NAME)
FS 3D CONCORD
MF C30 H25 N3 O4
SR CA
LC STN Files: CA, CAPLUS, USPATFULL
DT.CA CAplus document type: Patent
RL.P Roles from patents: ANST (Analytical study); PREP (Preparation)



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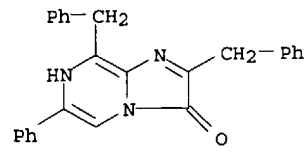
1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

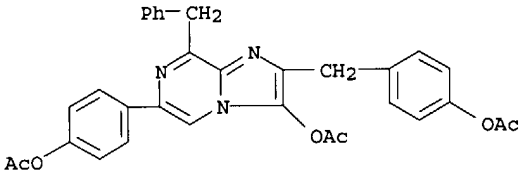
L3 ANSWER 7 OF 11 REGISTRY COPYRIGHT 2004 ACS on STN
RN **70217-82-2** REGISTRY
CN Imidazo[1,2-a]pyrazin-3(7H)-one, 6-phenyl-2,8-bis(phenylmethyl)- (9CI) (CA INDEX NAME)
OTHER NAMES:
CN Bisdeoxycoelenterazine
CN Coelenterazine 400a
CN Coelenterazine HH
CN Dideoxycoelenterazine
FS 3D CONCORD
MF C26 H21 N3 O
LC STN Files: BEILSTEIN*, CA, CAPLUS, CHEMCATS, CSCHEM, TOXCENTER, USPAT2, USPATFULL
(*File contains numerically searchable property data)
DT.CA CAplus document type: Journal; Patent
RL.P Roles from patents: ANST (Analytical study); BIOL (Biological study); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses)
RL.NP Roles from non-patents: BIOL (Biological study); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

8 REFERENCES IN FILE CA (1907 TO DATE)
8 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 8 OF 11 REGISTRY COPYRIGHT 2004 ACS on STN
RN **65417-16-5** REGISTRY
CN Imidazo[1,2-a]pyrazin-3-ol, 6-[4-(acetyloxy)phenyl]-2-[[4-(acetyloxy)phenyl]methyl]-8-(phenylmethyl)-, acetate (ester) (9CI) (CA INDEX NAME)
FS 3D CONCORD
MF C32 H27 N3 O6
LC STN Files: BEILSTEIN*, CA, CAPLUS, USPATFULL
(*File contains numerically searchable property data)
DT.CA CAplus document type: Journal; Patent
RL.P Roles from patents: ANST (Analytical study); PREP (Preparation)
RL.NP Roles from non-patents: PREP (Preparation); RACT (Reactant or reagent)



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2 REFERENCES IN FILE CA (1907 TO DATE)
2 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 9 OF 11 REGISTRY COPYRIGHT 2004 ACS on STN
RN **61869-41-8** REGISTRY
CN Luciferase (Renilla luciferin) (9CI) (CA INDEX NAME)
OTHER NAMES:
CN E.C. 1.13.12.5
CN Luciferase
CN Renilla luciferase
CN Renilla luciferin 2-monooxygenase
MF Unspecified
CI MAN
LC STN Files: ADISNEWS, AGRICOLA, BIOSIS, CA, CAPLUS, CEN, CIN, MEDLINE, PIRA, PROMT, TOXCENTER, USPAT2, USPATFULL
DT.CA CAplus document type: Conference; Dissertation; Journal; Patent; Report
RL.P Roles from patents: ANST (Analytical study); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); USES (Uses)
RLD.P Roles for non-specific derivatives from patents: ANST (Analytical study); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses)
RL.NP Roles from non-patents: ANST (Analytical study); BIOL (Biological study); FORM (Formation, nonpreparative); PREP (Preparation); PROC (Process); PRP (Properties); USES (Uses)
RLD.NP Roles for non-specific derivatives from non-patents: ANST (Analytical study); BIOL (Biological study); PREP (Preparation); PROC (Process); PRP (Properties); USES (Uses)

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205 REFERENCES IN FILE CA (1907 TO DATE)
19 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
208 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 10 OF 11 REGISTRY COPYRIGHT 2004 ACS on STN
RN **55779-48-1** REGISTRY
CN Imidazo[1,2-a]pyrazin-3(7H)-one, 6-(4-hydroxyphenyl)-2-[(4-hydroxyphenyl)methyl]-8-(phenylmethyl)- (9CI) (CA INDEX NAME)
OTHER NAMES:
CN Coelenterazin
CN Coelenterazine
CN Luciferin

CN Luciferin (Oplophorus)
CN NanoFuel
CN Preluciferin
CN Preluciferin (Watasenia)
FS 3D CONCORD
DR 57683-96-2
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(*File contains numerically searchable property data)
DT.CA CAplus document type: Conference; Journal; Patent
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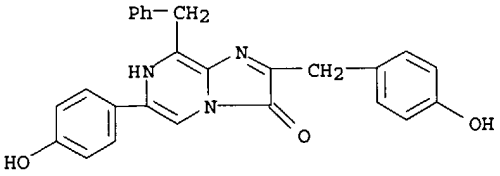

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181 REFERENCES IN FILE CA (1907 TO DATE)
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181 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 11 OF 11 REGISTRY COPYRIGHT 2004 ACS on STN
RN **50909-86-9** REGISTRY
CN Imidazo[1,2-a]pyrazin-3(7H)-one, 6-(4-hydroxyphenyl)-2,8-bis(phenylmethyl)- (9CI) (CA INDEX NAME)
OTHER NAMES:
CN 2-Deoxycoelenterazine
CN Coelenterazine h
CN Luciferin
CN Luciferin (Renilla)
FS 3D CONCORD
DR 50815-16-2
MF C26 H21 N3 O2
LC STN Files: ADISNEWS, AGRICOLA, BEILSTEIN*, BIOBUSINESS, BIOSIS, CA, CAPLUS, CEN, CHEMCATS, CIN, CSCHEM, MEDLINE, PIRA, PROMT, TOXCENTER, USPATFULL
(*File contains numerically searchable property data)
DT.CA CAplus document type: Conference; Journal; Patent
RL.P Roles from patents: ANST (Analytical study); BIOL (Biological study); PREP (Preparation); PROC (Process); PRP (Properties); USES (Uses)
RL.NP Roles from non-patents: ANST (Analytical study); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses)
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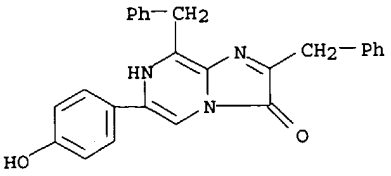

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40 REFERENCES IN FILE CA (1907 TO DATE)
2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
40 REFERENCES IN FILE CAPLUS (1907 TO DATE)

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FILE 'WPIX' ENTERED AT 08:32:21 ON 01 NOV 2004
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FILE LAST UPDATED: 27 OCT 2004 <20041027/UP>
MOST RECENT DERWENT UPDATE: 200469 <200469/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

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http://www.stn-international.de/training_center/patents/stn_guide.pdf <<<

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>>> SMILES and ISOSMILES strings are no longer available as Derwent Chemistry Resource display fields <<<

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L4 ANSWER 1 OF 1 WPIX COPYRIGHT 2004 THE THOMSON CORP on STN
AN 2003-468516 [44] WPIX
DNN N2003-372833 DNC C2003-125061
TI Kit useful for measuring the enzymatic activity of a luminogenic protein, comprises a protected luminophore and a luminogenic protein or a deprotecting enzyme.
DC B02 B04 D16 S03
IN HAWKINS, E; KLAUBERT, D; SCURRIA, M; WOOD, K
PA (HAWK-I) HAWKINS E; (KLAU-I) KLAUBERT D; (SCUR-I) SCURRIA M; (WOOD-I) WOOD K; (PROM-N) PROMEGA CORP
CYC 102
PI WO 2003040100 A1 20030515 (200344)* EN 30 C07D211-70
RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW
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US 2003153090 A1 20030814 (200355) G01N021-76 <--
EP 1451155 A1 20040901 (200457) EN C07D211-70
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AU 2002363424 A1 20030519 (200464) C07D211-70

ADT WO 2003040100 A1 WO 2002-US34972 20021101; US 2003153090 A1 US 2001-53482 20011102; EP 1451155 A1 EP 2002-802815 20021101, WO 2002-US34972 20021101; AU 2002363424 A1 AU 2002-363424 20021101
FDT EP 1451155 A1 Based on WO 2003040100; AU 2002363424 A1 Based on WO 2003040100
PRAI US 2001-53482 20011102
IC ICM C07D211-70; G01N021-76
ICS C07D241-02; C07D413-00; C12N009-02; C12Q001-34; C12Q001-66; G01N033-53
AB WO2003040100 A UPAB: 20030710
NOVELTY - A kit comprising a protected luminophore (A) and a luminogenic protein or a deprotecting enzyme, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:

(1) measurement of an enzymatic activity of a luminogenic protein involves contacting the protein, a deprotecting enzyme and (A) in a solution to form a composition (A1) and detecting the light produced from the composition;

(2) a protected luminophore which is a modified coelenterazine in which the enol group has been converted to an ester or an ether comprising an enzyme-removable group. The removal of the enzyme-removable group provides a parent coelenterazine. The time necessary for the concentration of the modified coelenterazine in a mixture comprising F12 medium and 10% fetal bovine serum at 22 deg. C to be reduced by 50% is greater than the time necessary for the concentration of the parent coelenterazine in a mixture comprising F12 medium and 10% fetal bovine serum at 22 deg. C to be reduced by 50%;

(3) generating luminescence in a living cell comprising the luciferase involves contacting the cell in solution with (A);

(4) measuring the enzymatic activity of a non-luminogenic enzyme involves contacting a liquid mixture comprising the luminogenic protein and (A) to form a composition and detecting the light produced from the composition;

(5) a compound of formula (I) - (III); and

(6) a composition comprising (I) - (III) in solution.

R7 = T or -CH2-C6H4OR14;

T = H, (hetero)alkyl or aryl;

R8 = T;

R9 = T or -C6H4OR15;

R10 = H, CH3 or -CH(CH3)2;

R11, R14 and R15 = enzyme-removable groups.

Provided that:

(1) R11, R14 and R15 are not all acetyl groups;

(2) the concentration of (I) in a mixture comprising F12 medium and 10% fetal bovine serum at 22 deg. C is reduced by less than 50% after 45 minutes;

(3) in (I), the time necessary for the concentration of the modified coelenterazine in a mixture comprising F12 medium and 10% fetal bovine serum at 22 deg. C to be reduced by 50% is greater than the time necessary for the concentration of the parent coelenterazine in a mixture comprising F12 medium and 10% fetal bovine serum at 22 deg. C to be reduced by 50% and the removal of at least one (preferably at least two, especially all) enzyme-removable groups provides the parent compound.

USE - The kit is used:

(a) for measurement of an enzymatic activity of a luminogenic protein (e.g. Renilla luciferase) and generating luminescence in a living cell comprising luciferase (claimed);

(b) in analytic applications e.g. to detect and quantitate luminogenic analytes which are substrates or proteins and analysis of genetic reporters e.g. multiplexed reporter where at least one reporter utilizes a luminophore;

(c) in in vivo applications within organism, for cell development, to measure a luminogenic analyte or non-luminogenic enzyme in a organ, tissue or cell type;

(d) in in vitro applications to measure substances and processed over time e.g. the expression of the luminogenic protein, the concentration of analyte and the expression of the non-luminogenic enzyme.

ADVANTAGE - The protected luminophore provides increased stability and improved signal-to-background ratio relative to the corresponding unmodified coelenterazine and provides for reduced autoluminescence under normal use conditions and is sensitive to substances other than luminogenic proteins. Therefore the composition is multi-functional and so provides a way to analyze non-luminogenic substances or processes through luminescent methods.

Dwg.0/3
FS CPI EPI
FA AB; GI; DCN

```
MC    CPI: B04-F01; B04-L01; B04-L03C; B04-N04; B06-D08; B06-D18; B11-C07B4;
           B12-K04E; D05-A01A4; D05-A01B; D05-H09
      EPI: S03-E14H4
      M1   *01* DCN: RA00GT-K; RA00GT-Z
      M1   *02* DCN: RA0F7A-K; RA0F7A-A; RA0F7A-M
      M1   *03* DCN: RA00H3-K; RA00H3-A; RA00H3-M
      M1   *04* DCN: RA00GC-K; RA00GC-A; RA00GC-M
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USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES: 29 OCT 2004 HIGHEST RN 772333-32-1
DICTIONARY FILE UPDATES: 29 OCT 2004 HIGHEST RN 772333-32-1

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
http://www.cas.org/ONLINE/DBSS/registryss.html

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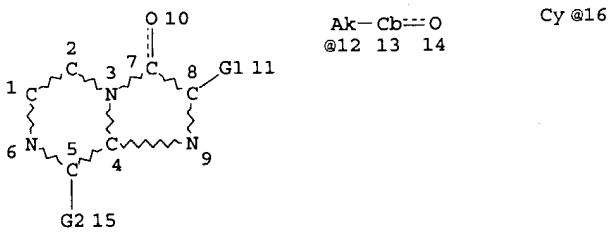
L5



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DEFAULT ECLEVEL IS LIMITED
ECOUNT IS E6 C AT 13

GRAPH ATTRIBUTES:
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STEREO ATTRIBUTES: NONE
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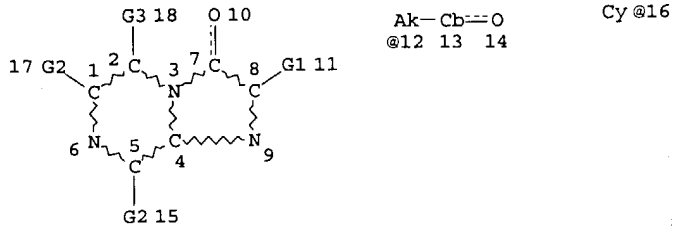

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GGCAT IS UNS AT 16
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GRAPH ATTRIBUTES:
RSPEC 1
NUMBER OF NODES IS 18

STEREO ATTRIBUTES: NONE

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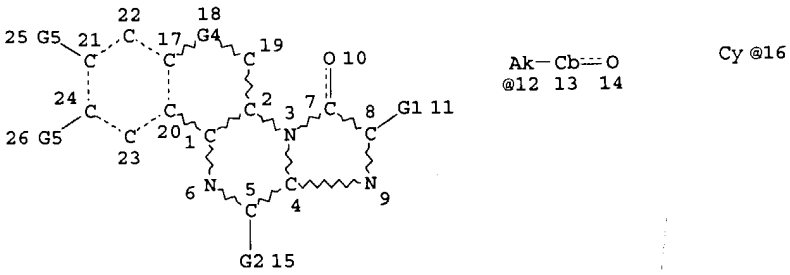

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NODE ATTRIBUTES:
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GGCAT IS MCY UNS AT 13
GGCAT IS UNS AT 16
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS E6 C AT 13

Formula
XIII 6R
XIV

GRAPH ATTRIBUTES:
RSPEC 1
NUMBER OF NODES IS 26

STEREO ATTRIBUTES: NONE

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L3 11 SEA L2

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L4 1 US20030153090/PN

FILE 'REGISTRY' ENTERED AT 08:55:54 ON 01 NOV 2004
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[redacted] ENTERED AT 09:28:14 ON 01 NOV 2004
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FILE COVERS 1907 - 1 Nov 2004 VOL 141 ISS 19
FILE LAST UPDATED: 31 Oct 2004 (20041031/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

[redacted]

L26 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2004:270174 HCAPLUS
DN 140:299425
ED Entered STN: 02 Apr 2004
TI Luminescent cytochrome P 450 assay using luciferase, luciferin derivatives
and pyrophosphatase, and drug screening applications
[redacted] Cali, James J.; **Klaubert, Dieter**; Daily, William; Ho, Samuel Kin
Sang; Frackman, Susan; **Hawkins, Erika**; **Wood, Keith V.**
[redacted] **Promega** Corporation, USA
SO PCT Int. Appl., 130 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM G01N
CC 7-1 (Enzymes)

Section cross-reference(s): 1, 63

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004027378	A2	20040401	WO 2003-US29078	20030916
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	US 2004171099	A1	20040902	US 2003-665314	20030919
PRAI	US 2002-412254P	P	20020920		
	US 2003-483309P	P	20030627		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2004027378	ICM	G01N

OS MARPAT 140:299425

AB The present invention provides methods, compns., substrates, and kits useful for analyzing the metabolic activity in cells, tissue, and animals and for screening test compds. for their effect on cytochrome P 450 activity. In particular, a one-step and two-step methods using luminogenic mols., e.g. luciferin or coelenterazines, that are cytochrome P 450 substrates and that are also bioluminescent enzyme, e.g., luciferase, pro-substrates are provided. Upon addition of the luciferin derivative or other luminogenic mol. into a P 450 reaction, the P 450 enzyme metabolizes the mol. into a bioluminescent enzyme substrate, e.g., luciferin and/or luciferin derivative metabolite, in a P 450 reaction. The resulting metabolite(s) serves as a substrate of the bioluminescent enzyme, e.g., luciferase, in a second light-generating reaction. Luminescent cytochrome P 450 assays with low background signals and high sensitivity are disclosed and isoform selectivity is demonstrated. The present invention also provides an improved method for performing luciferase reactions which employs added pyrophosphatase to remove inorg. pyrophosphate, a luciferase inhibitor which may be present in the reaction mixture as a contaminant or may be generated during the reaction. The present method further provides a method for stabilizing and prolonging the luminescent signal in a luciferase-based assay using luciferase stabilizing agents such as reversible luciferase inhibitors.

ST cytochrome P 450 detn luciferase luciferin coelenterazine bioluminescence; drug screening cytochrome P 450 luminescent assay

IT Animal
Animal tissue
Bile
Cell
Feces
Liver
Microsome
(P 450 determination in; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT Transgene
RL: BPN (Biosynthetic preparation); BUU (Biological use, unclassified); BIOL (Biological study); PREP (Preparation); USES (Uses)
(animal, P 450 determination in; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT Enzymes, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(bioluminescent; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT High throughput screening
(drug; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT Drug screening
(high throughput; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT Teleostei
(in high throughput screening assay; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT Blood analysis
Chemiluminescence spectroscopy
Chemiluminescent substances
Cytolysis
High throughput screening
Luminescence, bioluminescence
Luminescence spectroscopy
Luminescent substances
Surfactants
Test kits
Urine analysis
(luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT Surfactants
(nonionic; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT 7048-04-6, Cysteine hydrochloride monohydrate
RL: RCT (Reactant); RACT (Reactant or reagent)
(conversion of 2-cyanobenzothiazole derivs. to D-luciferin derivs.; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT 9035-51-2, Cytochrome P 450, biological studies
RL: ANT (Analyte); BUU (Biological use, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT 56-65-5, 5'-ATP, uses 2591-17-5D, Luciferin, derivs. 7439-95-4, Magnesium, uses 55779-48-1, Coelenterazine 55779-48-1D, Coelenterazine, derivs. **676460-49-4D**, Imidazo[1,2-a]pyrazin-3-ol, derivs.
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT 9014-00-0P, Luciferase 61869-41-8P, Renilla luciferase 61970-00-1P, Firefly luciferase
RL: ARG (Analytical reagent use); BPN (Biosynthetic preparation); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); USES (Uses)
(luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT 676460-30-3P 676460-31-4P 676460-32-5P 676460-33-6P 676460-34-7P 676460-35-8P 676460-37-0P 676460-39-2P 676460-41-6P 676460-43-8P **676460-47-2P**, Coelenterazine HH methyl ether
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT 9024-82-2, Pyrophosphatase
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT 100-39-0, Benzyl bromide 107-04-0, 1-Bromo-2-chloroethane 402-49-3, 4-(Trifluoromethyl)benzyl bromide 615-20-3, 2-Chlorobenzothiazole 870-63-3, Prenyl bromide 939-69-5, 2-Cyano-6-hydroxybenzothiazole 2591-17-5, D-Luciferin 4916-55-6, 3-(Bromomethyl)pyridine hydrobromide 6138-90-5, Geranyl bromide 31106-82-8, 2-(Bromomethyl)pyridine hydrobromide 73870-24-3, 4-(Bromomethyl)pyridine hydrobromide
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of 2-cyanobenzothiazole derivs.; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT 103-63-9P, 2-(Bromoethyl)benzene 2602-85-9P, 2-Cyanobenzothiazole 676460-20-1P 676460-21-2P 676460-22-3P 676460-23-4P 676460-24-5P 676460-25-6P 676460-26-7P 676460-27-8P 676460-28-9P 676460-29-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of 2-cyanobenzothiazole derivs.; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT 70217-82-2P, Coelenterazine HH
RL: ARG (Analytical reagent use); RCT (Reactant); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(preparation of coelenterazine derivs.; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)

IT 79-37-8, Oxalyl chloride 108-24-7, Acetic anhydride 156-06-9, Phenylpyruvic acid 17476-04-9, Lithium tri-tert-butoxyaluminohydride 70217-86-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of coelenterazine derivs.; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)
IT 56485-04-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of coelenterazine derivs.; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)
IT 92-36-4, 2-(4-Aminophenyl)-6-methylbenzothiazole 2536-91-6, 2-Amino-6-methylbenzothiazole
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(stabilization of luminescent signal using luciferase inhibitor; luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)
IT **676460-49-4D**, Imidazo[1,2-a]pyrazin-3-ol, derivs.
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(luminescent cytochrome P 450 assay using luciferase, luciferin derivs. and pyrophosphatase, and drug screening applications)
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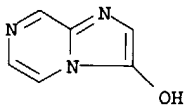
CN Imidazo[1,2-a]pyrazin-3-ol (9CI) (CA INDEX NAME)



L26 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:376823 HCAPLUS
DN 138:365147
ED Entered STN: 16 May 2003
TI Compositions, methods and kits pertaining to luminescent compounds
IN **Wood, Keith**; **Hawkins, Erika**; **Scurria, Mike**; **Klaubert, Dieter**
PA **Promega** Corporation, USA
SO PCT Int. Appl., 60 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C07D211-70
ICS C07D241-02; C07D413-00; C12N009-02; C12Q001-34; C12Q001-66; G01N033-53
CC 9-14 (Biochemical Methods)
Section cross-reference(s): 80
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2003040100	A1	20030515	WO 2002-US34972	20021101
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
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US 2003153090	A1	20030814	US 2001-53482	20011102
EP 1451155	A1	20040901	EP 2002-802815	20021101
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PRAI US 2001-53482	A	20011102		
WO 2002-US34972	W	20021101		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES

WO 2003040100 ICM C07D211-70
ICS C07D241-02; C07D413-00; C12N009-02; C12Q001-34; C12Q001-66; G01N033-53

OS MARPAT 138:365147

AB A method of measuring the enzymic activity of a luciferase includes contacting a luminogenic protein, such as a luciferase, with a protected luminophore to form a composition; and detecting light produced from the composition The protected luminophore provides increased stability and improved signal-to-background ratios relative to the corresponding unmodified coelenterazine.

ST compn kit pertaining luminescent compd protein

IT Cell
Luminescent substances
(compns., methods and kits pertaining to luminescent compds.)

IT Proteins
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(luminogenic; compns., methods and kits pertaining to luminescent compds.)

IT 61869-41-8, Renilla luciferase
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(compns., methods and kits pertaining to luminescent compds.)

IT 50909-86-9P 55779-48-1P **65417-16-5P** 70217-82-2P
524066-91-9P 524066-92-0P 524066-93-1P
524066-94-2P 524066-95-3P 524066-96-4P
RL: ARU (Analytical role, unclassified); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation)
(compns., methods and kits pertaining to luminescent compds.)

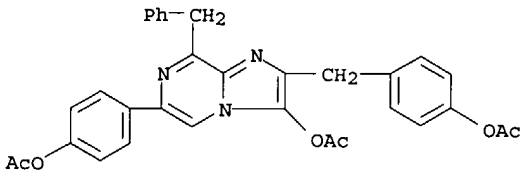
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Bryan; US 6416960 B1 2002 HCAPLUS
(2) Garini; US 6165734 A 2000 HCAPLUS
(3) Hideshi, N; Journal American Chem Society 2001, V123, P1523
(4) Inouye, S; Biochemical and Biophysical Research Communications 1997, V233, P349 HCAPLUS
(5) Jones, K; Trends in Biotechnology 1999, V17, P477 HCAPLUS
(6) Roelant; US 6171809 B1 2001 HCAPLUS
(7) Shimomura, O; Biochemistry Journal 1989, V261, P913 HCAPLUS
(8) Shimomura, O; Biochemistry Journal 1995, V306, P537 HCAPLUS

IT **65417-16-5P**
RL: ARU (Analytical role, unclassified); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation)
(compns., methods and kits pertaining to luminescent compds.)

RN 65417-16-5 HCAPLUS

CN Imidazo[1,2-a]pyrazin-3-ol, 6-[4-(acetyloxy)phenyl]-2-[[4-(acetyloxy)phenyl]methyl]-8-(phenylmethyl)-, acetate (ester) (9CI) (CA INDEX NAME)



L26 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:108790 HCAPLUS

DN 139:129758

ED Entered STN: 12 Feb 2003

TI Coelenterazine derivatives for improved solution solubility

AU **Hawkins, Erika M.**; O'Grady, Michael; **Klaubert, Dieter**; **Scurria, Michael**; Good, Troy; Stratford, Cathy; Flemming, Rod; Simpson, Dan; **Wood, Keith V.**

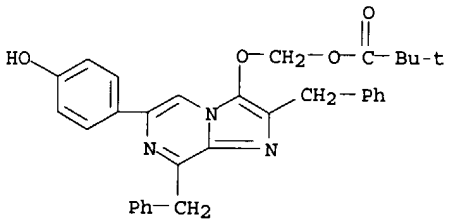
CS **Promega** Corporation, Madison, WI, 53715, USA

SO Bioluminescence & Chemiluminescence: Progress & Current Applications, [Proceedings of the Symposium on Bioluminescence and Chemiluminescence], 12th, Cambridge, United Kingdom, Apr. 5-9, 2002 (2002), 149-152. Editor(s): Stanley, Philip E.; Kricka, Larry J. Publisher: World Scientific Publishing Co. Pte. Ltd., Singapore, Singapore. CODEN: 69DPGZ; ISBN: 981-238-156-2

DT Conference

LA English

CC 7-3 (Enzymes)
Section cross-reference(s): 9
AB Intracellular luminescent techniques requiring coelenterazine, such as bioluminescence resonance energy transfer (BRET), calcium detection, and intracellular reporter measurements, must accommodate the poor stability of this substrate in physiol. buffered solns. Coelenterazine degradation leads both to loss of luminescence over time, and increased background luminescence caused by enzyme-independent oxidation (autoluminescence). Both conditions limit luminescence sensitivity by reducing the signal-to-noise ratio. Coelenterazine can be stabilized by derivatizing the enol oxygen with an acyl oxymethyl ether. This prevents spontaneous oxidation in solution while making the substrate available intracellularly upon cleavage of the blocking group by endogenous esterases. We will describe the stability of pivaloyl oxymethyl coelenterazine-h (POM coelenterazine-h), and the effect of POM coelenterazine-h on intracellular luminescence, autoluminescence, and luminescent reaction kinetics. Also, we will present the characteristics of two other coelenterazine derivs.
ST coelenterazine deriv improved soln soly reporter
IT Luminescence
(coelenterazine derivs. for improved solution solubility)
IT Animal cell line
(mammalian; coelenterazine derivs. for improved solution solubility)
IT 50909-86-9, Coelenterazine-h 61869-41-8, Renilla luciferase
524066-95-3D, diacetyl derivative **566945-96-8**
RL: BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(coelenterazine derivs. for improved solution solubility)
IT **524066-95-3D**, diacetyl derivative
RL: BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(coelenterazine derivs. for improved solution solubility)
RN 524066-95-3 HCAPLUS
CN Propanoic acid, 2,2-dimethyl-, [[6-(4-hydroxyphenyl)-2,8-bis(phenylmethyl)imidazo[1,2-a]pyrazin-3-yl]oxy]methyl ester (9CI) (CA INDEX NAME)



[redacted]

L28 ANSWER 1 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:851130 HCAPLUS
DN 135:371764
ED Entered STN: 23 Nov 2001
TI Preparation of aminopyrazines and imidazolopyrazinones as antioxidants
IN Marchand-Brynaert, Jacqueline; Cavalier, Jean-Francois; Rees, Jean-Francois; De Tollenaere, Catherine; Burton, Maggi
PA Universite Catholique de Louvain, Belg.
SO PCT Int. Appl., 57 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C07D241-20
ICS A61K031-495; A23L003-3544; C08K005-3462
CC 28-17 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 1, 17, 38, 62
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001087853	A1	20011122	WO 2001-EP5588	20010516 <--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,

LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

EP 1292580 A1 20030319 EP 2001-943383 20010516 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
US 2004034225 A1 20040219 US 2003-276398 20030728 <--
PRAI EP 2000-870107 A 20000517 <--
EP 2000-870293 A 20001212 <--
WO 2001-EP5588 W 20010516 <--

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2001087853	ICM	C07D241-20
	ICS	A61K031-495; A23L003-3544; C08K005-3462
US 2004034225	ECLA	A23L003/3544; C07D241/20; C07D487/04 <--

OS CASREACT 135:371764; MARPAT 135:371764

AB Antioxidants, 5 2-amino-(p-hydroxyphenyl)pyrazines and 3 (p-hydroxyphenyl)-3,7-dihydroimidazo[1,2-a]pyrazin-3-ones were prepared and claimed useful in diagnostic procedures, as food additives, polymer additives and as UV screens in cosmetics. E.g., 2-amino-3,5-dibromopyrazine was treated with p-methoxyphenylboronic acid in the presence of bis(benzonitrile)palladium dichloride and 1,4-bis(diphenylphosphino)butane in a solvent mix of EtOH, aqueous sodium carbonate and toluene to give 66% 2-amino-3,5-bis(p-methoxyphenyl)pyrazine, which was demethylated with EtSNa in DMF to give 88% 2-amino-3,5-bis(p-hydroxyphenyl)pyrazine (I). In tests on inhibition of lipid peroxidn. 2-aminopyrazines possessing 2 aryl substituents, one of them being a p-hydroxyphenyl in o- or p- position with respect to the amino group, are endowed with antioxidative properties. However, the p-hydroxyphenyl conferred more activity when located at position 5 than at position 3. The presence of p-hydroxyphenyl groups at both positions 3 and 5 as in I produced a very active compound Analogs lacking the free phenol groups showed reduced activities. Corresponding imidazolopyrazinones combined the properties of both the imidazolopyrazinones (delay of the onset of peroxidn.) and the aminopyrazines (lower rate of oxidation after onset).

ST antioxidant aminopyrazine imidazolopyrazinone prepn; food additive antioxidant aminopyrazine imidazolopyrazinone prepn; polymer additive antioxidant aminopyrazine imidazolopyrazinone prepn; lipid peroxidn inhibitor antioxidant aminopyrazine imidazolopyrazinone prepn; UV screen cosmetic antioxidant aminopyrazine imidazolopyrazinone prepn; pyrazine amino hydroxyphenyl prepn

IT Azines
RL: FFD (Food or feed use); MOA (Modifier or additive use); RCT (Reactant); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
((p-hydroxyphenyl)pyrazines; preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT Polymers, uses
RL: POF (Polymer in formulation); USES (Uses)
(additives; preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT Azines
RL: FFD (Food or feed use); MOA (Modifier or additive use); RCT (Reactant); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(aminopyrazines; preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT Lipids, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(peroxidn.; preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT UV B radiation
(preparation of aminopyrazines and imidazolopyrazinones as antioxidant protectants against)

IT Sunscreens
(preparation of aminopyrazines and imidazolopyrazinones as antioxidant protectants against UVB radiation)

IT Antioxidants
Food additives
Food preservatives
(preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT 350230-59-0P, 2,6-Diamino-3,5-bis(p-hydroxyphenyl)pyrazine 350230-62-5P, 2-Amino-3,5-bis(p-hydroxyphenyl)pyrazine 374588-71-3P, 2-Amino-5-(p-hydroxyphenyl)-3-methylpyrazine 374588-73-5P, 2-Amino-3-(p-hydroxyphenyl)-5-phenylpyrazine
RL: FFD (Food or feed use); MOA (Modifier or additive use); RCT (Reactant); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT 350230-61-4P 374588-74-6P **374588-75-7P 374588-76-8P 374588-77-9P 374588-78-0P**
RL: FFD (Food or feed use); MOA (Modifier or additive use); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT 19943-97-6P 27955-58-4P
RL: FFD (Food or feed use); MOA (Modifier or additive use); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT 98-80-6, Phenylboronic acid 100-39-0, Benzyl bromide 5720-07-0, p-Methoxyphenylboronic acid 24241-18-7, 2-Amino-3,5-dibromopyrazine 58885-20-4, 2,6-Diamino-3,5-dibromopyrazine 59489-71-3, 2-Amino-5-bromopyrazine 67602-05-5, 2-Amino-3-bromo-5-phenylpyrazine 122775-35-3, 3,4-Dimethoxyphenylboronic acid 350819-24-8, 2-Amino-3-bromo-5-(4-methoxyphenyl)pyrazine
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT 350230-58-9P, 2,6-Diamino-3,5-bis(p-methoxyphenyl)pyrazine 350819-13-5P 350819-14-6P 374588-70-2P, 2-Amino-5-(p-methoxyphenyl)-3-methylpyrazine 374588-72-4P, 2-Amino-3-(p-methoxyphenyl)-5-phenylpyrazine 374588-81-5P 374588-83-7P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT 119738-50-0P, 2-Amino-5-(4-methoxyphenyl)pyrazine 174680-63-8P, 2-Amino-3,5-bis(p-methoxyphenyl)pyrazine
RL: RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT 57683-97-3P 123488-68-6P 123488-69-7P 144763-52-0P 152719-89-6P 152719-90-9P 152916-61-5P 350819-19-1P **374588-79-1P 374588-80-4P** 374588-82-6P 374588-84-8P **374588-85-9P 374588-86-0P 374588-87-1P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

IT 13535-13-2P, 2-Amino-5-phenylpyrazine 41270-70-6P, 2-Amino-3,5-diphenylpyrazine 73444-23-2P, 2-Methylamino-5-phenylpyrazine 204770-67-2P, 2-Amino-5-(4-hydroxyphenyl)pyrazine
RL: SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

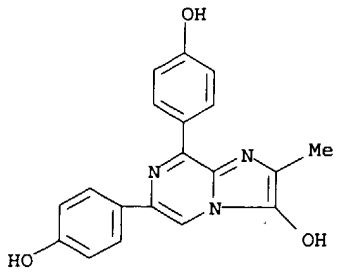
RE

(1) Anon; PATENT ABSTRACTS OF JAPAN 1996, V1996(07)
(2) Anon; PATENT ABSTRACTS OF JAPAN 1997, V1997(03)
(3) Anon; PATENT ABSTRACTS OF JAPAN 1998, V1998(08)
(4) Dubuisson, M; WO 9843641 A 1998 HCAPLUS
(5) Nippon Oil &Amp; JP 08059686 A 1996 HCAPLUS
(6) Nippon Oil &Amp; JP 08294397 A 1996 HCAPLUS
(7) Nippon Shokuhin Kako Co Ltd; JP 10077286 A 1998 HCAPLUS
(8) Sato; SYNTHESIS 1994, V9, P931
(9) Univ Louvain; WO 9628160 A 1996 HCAPLUS
(10) Watanabe; SYNTHESIS 1980, V1, P39 MEDLINE

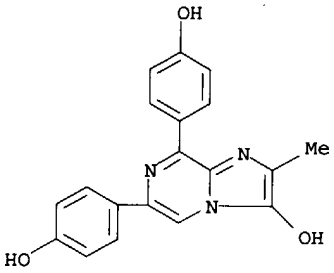
IT **374588-75-7P 374588-76-8P 374588-77-9P 374588-78-0P**
RL: FFD (Food or feed use); MOA (Modifier or additive use); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

RN 374588-75-7 HCAPLUS

CN Imidazo[1,2-a]pyrazin-3-ol, 6,8-bis(4-hydroxyphenyl)-2-methyl- (9CI) (CA INDEX NAME)

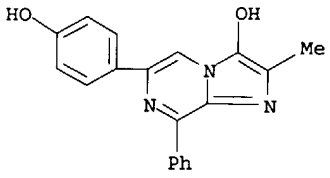


RN 374588-76-8 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 6,8-bis(4-hydroxyphenyl)-2-methyl-, monohydrochloride (9CI) (CA INDEX NAME)

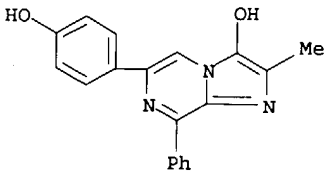


● HCl

RN 374588-77-9 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 6-(4-hydroxyphenyl)-2-methyl-8-phenyl- (9CI) (CA INDEX NAME)



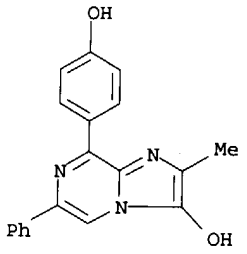
RN 374588-78-0 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 6-(4-hydroxyphenyl)-2-methyl-8-phenyl-, monohydrochloride (9CI) (CA INDEX NAME)



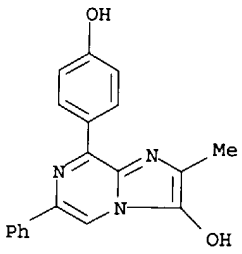
● HCl

IT **374588-79-1P 374588-80-4P 374588-85-9P**
374588-86-0P 374588-87-1P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of aminopyrazines and imidazolopyrazinones as antioxidants)

RN 374588-79-1 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 8-(4-hydroxyphenyl)-2-methyl-6-phenyl- (9CI) (CA INDEX NAME)

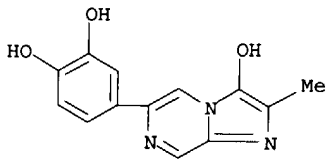


RN 374588-80-4 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 8-(4-hydroxyphenyl)-2-methyl-6-phenyl-, monohydrochloride (9CI) (CA INDEX NAME)

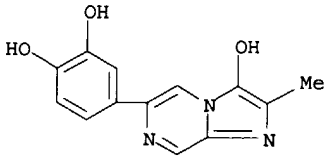


● HCl

RN 374588-85-9 HCAPLUS
CN 1,2-Benzenediol, 4-(3-hydroxy-2-methylimidazo[1,2-a]pyrazin-6-yl)- (9CI) (CA INDEX NAME)

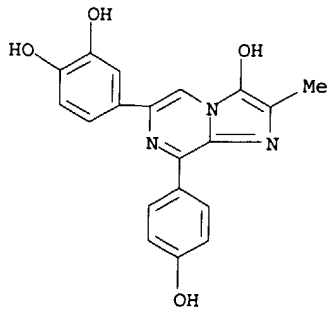


RN 374588-86-0 HCAPLUS
CN 1,2-Benzenediol, 4-(3-hydroxy-2-methylimidazo[1,2-a]pyrazin-6-yl)-, monohydrochloride (9CI) (CA INDEX NAME)



● HCl

RN 374588-87-1 HCAPLUS
CN 1,2-Benzenediol, 4-[3-hydroxy-8-(4-hydroxyphenyl)-2-methylimidazo[1,2-a]pyrazin-6-yl]- (9CI) (CA INDEX NAME)



L28 ANSWER 2 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1997:48722 HCAPLUS
DN 126:72331
ED Entered STN: 23 Jan 1997
TI Chemiluminescent substrate for enzyme immunoassay
IN Sakaki, Hidejiro; Mitani, Motohiro; Koinuma, Yasuyoshi; Totani, Yoshiaki
PA Nippon Oils & Fats Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C12Q001-34
ICS G01N021-78; G01N033-543
CC 9-10 (Biochemical Methods)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08294397	A2	19961112	JP 1995-125617	19950427 <--
PRAI	JP 1995-125617		19950427 <--		

CLASS

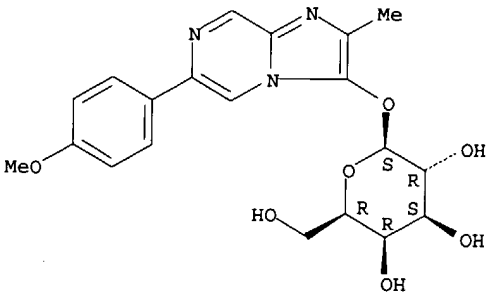
PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 08294397	ICM	C12Q001-34
	ICS	G01N021-78; G01N033-543

OS MARPAT 126:72331
AB Chemiluminescent substrate for sugar-hydrolyzing enzyme is prepared for EIA. 3-(.beta.-D-galactopyranosyloxy)-6-(4-methoxyphenyl)-2-methylimidazole[1,2-a]pyrazine was prepared from 6-(4-methoxyphenyl)-2-methyl-3-(tetra-O-acetyl-.beta.-D-galactopyranosyloxy)imidazole[1,2-a]pyrazine, and used for chemiluminescent EIA.
ST chemiluminescence EIA substrate carbohydrate hydrolyzing enzyme
IT Immunoglobulins
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(G, galactosidase; chemiluminescent substrate for EIA using carbohydrate-hydrolyzing enzyme)
IT Immunoassay
Immunoassay
(chemiluminescence enzyme; chemiluminescent substrate for EIA using carbohydrate-hydrolyzing enzyme)
IT 9001-02-9, Carbohydrate-hydrolyzing enzymes 9031-11-2, .beta.-Galactosidase
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(chemiluminescent substrate for EIA using carbohydrate-hydrolyzing enzyme)
IT **159503-66-9P**
RL: ARU (Analytical role, unclassified); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation)
(chemiluminescent substrate for EIA using carbohydrate-hydrolyzing enzyme)
IT 3068-32-4, 2,3,4,6-Tetra-O-acetyl-.alpha.-D-galactopyranosyl bromide 185311-71-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(chemiluminescent substrate for EIA using carbohydrate-hydrolyzing enzyme)
IT **177205-13-9P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(chemiluminescent substrate for EIA using carbohydrate-hydrolyzing

enzyme)

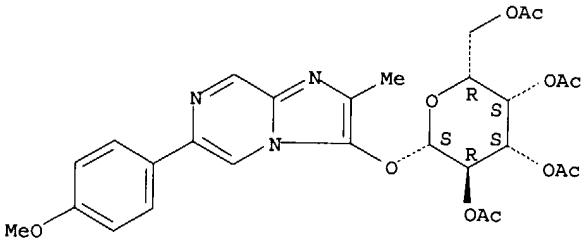
IT **159503-66-9P**
RL: ARU (Analytical role, unclassified); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation)
(chemiluminescent substrate for EIA using carbohydrate-hydrolyzing enzyme)
RN 159503-66-9 HCAPLUS
CN .beta.-D-Galactopyranoside, 6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazin-3-yl (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT **177205-13-9P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(chemiluminescent substrate for EIA using carbohydrate-hydrolyzing enzyme)
RN 177205-13-9 HCAPLUS
CN .beta.-D-Galactopyranoside, 6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazin-3-yl, 2,3,4,6-tetraacetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



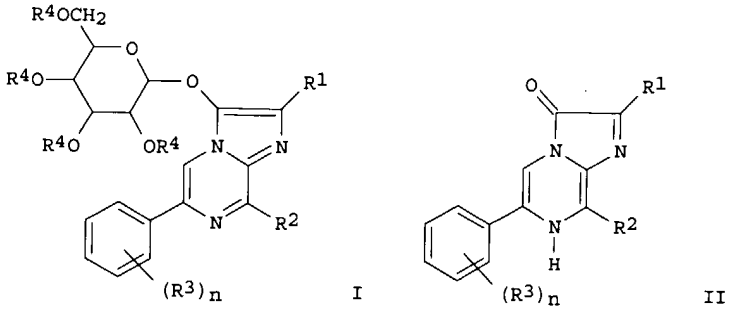
L28 ANSWER 3 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1996:335963 HCAPLUS
DN 125:11354
ED Entered STN: 08 Jun 1996
TI Preparation of luciferin derivatives of Umihotaru (Cypridina hilgendorfii)
IN Mitani, Motohiro; Sakaki, Hidejiro; Koinuma, Yasuyoshi; Totani, Yoshiaki
PA Nippon Oils & Fats Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C07H017-02
ICS C07D487-04; C12Q001-34; G01N021-78
CC 33-3 (Carbohydrates)
Section cross-reference(s): 9
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08059686	A2	19960305	JP 1994-198770	19940823 <--
PRAI JP 1994-198770		19940823 <--		

CLASS

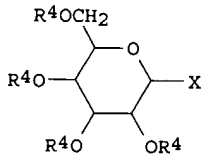
PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 08059686	ICM	C07H017-02

ICS C07D487-04; C12Q001-34; G01N021-78
OS CASREACT 125:11354; MARPAT 125:11354
GI



I

II



III

AB The title compds. (I; R1, R2 = H, C1-20 alkyl, C6-20 aryl, C7-19 arylalkyl; R3 = C1-5 alkyl or alkoxy; n = 0-5), which are useful as substrates for luminescent determination of sugar hydrolases such as .alpha.-D-galactosidase, are prepared by reacting imidazopyrazinone derivs. (II; R1 - R3, n = same as above) with sugar derivs. (III; X = halo; R4 = C1-7 acyl) in the presence of silver triflate and Na2HPO4. followed by solvolysis in the presence of an alkali. Thus, 0.1 g 6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazin-3-one and 1.1 g Na2HPO4 were treated with 5 mL MeCN, 9 mL benzene, and 2.6 g mol. sieve 4A and stirred at room temperature for 1 h, treated with 0.18 g 2,3,4,6-tetra-O-acetyl-.alpha.-D-galactopyranosyl bromide and 0.37 g silver triflate, and stirred at room temperature for 2 h to give 39% 6-(4-methoxyphenyl)-2-methyl-3-(2,3,4,6-tetra-O-acetyl-.alpha.-D-galactopyranosyloxy)imidazo[1,2-a]pyrazine, which (0.5 g) was treated with 3.5 mL MeOH and 1.8 mL concentrated aqueous NH3 and stirred at 40.degree. for 6 h 30 min to give 78% 6-(4-methoxyphenyl)-2-methyl-3-(.alpha.-D-galactopyranosyloxy)imidazo[1,2-a]pyrazine (IV). IV showed luminescence in the presence of .beta.-D-galactosidase with correlation factor r = 0.992.

ST luciferin deriv Cypridina hilgendorfii prepn; luminescent detn sugar hydrolase; galactosidase luminescent detn substrate luciferin deriv; glucosidase luminescent detn; imidazopyrazinone glycosidation; silver triflate glycosidation catalyst; disodium hydrogen phosphate glycosidation catalyst

IT Luminescence
(preparation of luciferin derivs. of Cypridina hilgendorfii as substrates for luminescent determination of sugar hydrolases)

IT Glycosidation catalysts
(silver triflate and disodium hydrogen phosphate for preparation of luciferin derivs. of Cypridina hilgendorfii by glycosidation of imidazopyrazinones as substrates for luminescent determination of sugar hydrolases)

IT 9031-11-2
RL: ANT (Analyte); ANST (Analytical study)
(preparation of luciferin derivs. of Cypridina hilgendorfii as substrates for luminescent determination of sugar hydrolases)

IT **159503-66-9P 177205-12-8P**
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(preparation of luciferin derivs. of Cypridina hilgendorfii as substrates for luminescent determination of sugar hydrolases)

IT 2923-28-6, Silver triflate 3068-32-4, 2,3,4,6-Tetra-O-acetyl-.alpha.-D-galactopyranosyl bromide 7558-79-4, Disodium hydrogen phosphate
RL: CAT (Catalyst use); USES (Uses)
(preparation of luciferin derivs. of Cypridina hilgendorfii as substrates

for luminescent determination of sugar hydrolases)

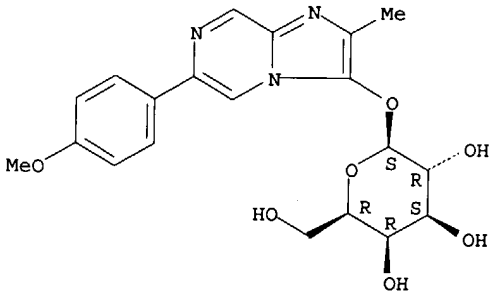
IT 572-09-8, 2,3,4,6-Tetra-O-acetyl-.alpha.-D-glucopyranosyl bromide
118877-07-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of luciferin derivs. of Cypridina hilgendorfii as substrates for luminescent determination of sugar hydrolases)

IT **177205-13-9P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of luciferin derivs. of Cypridina hilgendorfii as substrates for luminescent determination of sugar hydrolases)

IT **159503-66-9P 177205-12-8P**
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(preparation of luciferin derivs. of Cypridina hilgendorfii as substrates for luminescent determination of sugar hydrolases)

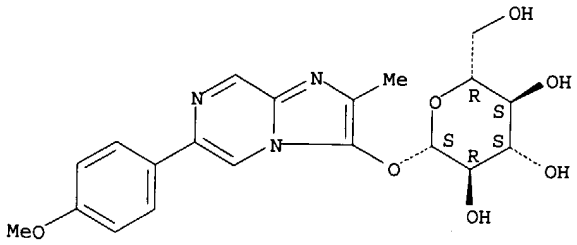
RN 159503-66-9 HCAPLUS
CN .beta.-D-Galactopyranoside, 6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazin-3-yl (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RN 177205-12-8 HCAPLUS
CN .beta.-D-Glucopyranoside, 6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazin-3-yl (9CI) (CA INDEX NAME)

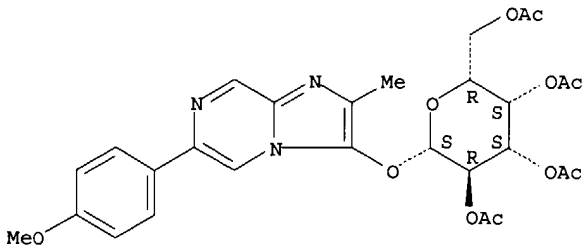
Absolute stereochemistry.



IT **177205-13-9P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of luciferin derivs. of Cypridina hilgendorfii as substrates for luminescent determination of sugar hydrolases)

RN 177205-13-9 HCAPLUS
CN .beta.-D-Galactopyranoside, 6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazin-3-yl, 2,3,4,6-tetraacetate (9CI) (CA INDEX NAME)

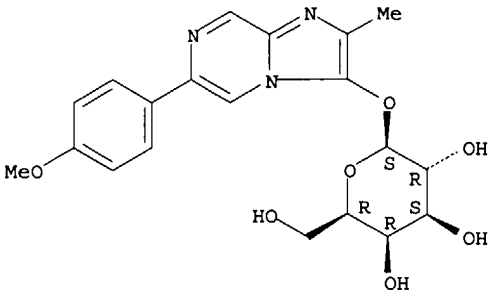
Absolute stereochemistry.



L28 ANSWER 4 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:992122 HCAPLUS
DN 124:80192
ED Entered STN: 20 Dec 1995
TI Enhancement effect of 2,6-O-dimethyl-.beta.-cyclodextrin on the chemiluminescent detection of .beta.-D-galactosidase using a Cypridina luciferin analog
AU Mitani, Motohiro; Sakaki, Syujiro; Koinuma, Yasumi; Toya, Yoshiaki; Kosugi, Masanori
CS Tsukuba Res. Lab., NOF Corp., Tsukuba, 300-26, Japan
SO Analytical Sciences (**1995**), 11(6), 1013-15
CODEN: ANSCEN; ISSN: 0910-6340
PB Japan Society for Analytical Chemistry
DT Journal
LA English
CC 7-1 (Enzymes)
Section cross-reference(s): 9
AB .beta.-Cyclodextrins enhanced the chemiluminescent detection of .beta.-galactosidase using the Cypridina luciferin analog 3-(.beta.-D-galactopyranosyloxy)-6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazine (.beta.-Gal-MCLA) in the order 2,6-O-dimethyl-.beta.-cyclodextrin > 2,3,6-O-trimethyl-.beta.-cyclodextrin > .beta.-cyclodextrin. Detection of mouse IgG by chemiluminescent enzyme immunoassay (CLEIA) using .beta.-Gal-MCLA and .beta.-galactosidase to amplify the signal was also enhanced by inclusion of 2,6-O-trimethyl-.beta.-cyclodextrin.
ST galactosidase beta detn chemiluminescence beta cyclodextrin; IgG detn chemiluminescent enzyme immunoassay cyclodextrin
IT Luminescence, chemi-
(enhancement effect of 2,6-O-dimethyl-.beta.-cyclodextrin on the chemiluminescent detection of .beta.-D-galactosidase using a Cypridina luciferin analog)
IT Immunoglobulins
RL: ANT (Analyte); ANST (Analytical study)
(G, ant; enhancement effect of 2,6-O-dimethyl-.beta.-cyclodextrin on the chemiluminescent detection of .beta.-D-galactosidase using a Cypridina luciferin analog)
IT Immunoassay
(chemiluminescence enzyme, enhancement effect of 2,6-O-dimethyl-.beta.-cyclodextrin on the chemiluminescent detection of .beta.-D-galactosidase using a Cypridina luciferin analog)
IT 9031-11-2
RL: ANT (Analyte); ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(enhancement effect of 2,6-O-dimethyl-.beta.-cyclodextrin on the chemiluminescent detection of .beta.-D-galactosidase using a Cypridina luciferin analog)
IT 7585-39-9, .beta.-Cyclodextrin 51166-71-3, 2,6-O-Dimethyl-.beta.-cyclodextrin 55216-11-0, 2,3,6-O-Trimethyl-.beta.-cyclodextrin **159503-66-9**
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(enhancement effect of 2,6-O-dimethyl-.beta.-cyclodextrin on the chemiluminescent detection of .beta.-D-galactosidase using a Cypridina luciferin analog)
IT **159503-66-9**
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(enhancement effect of 2,6-O-dimethyl-.beta.-cyclodextrin on the chemiluminescent detection of .beta.-D-galactosidase using a Cypridina luciferin analog)
RN 159503-66-9 HCAPLUS
CN .beta.-D-Galactopyranoside, 6-(4-methoxyphenyl)-2-methylimidazo[1,2-

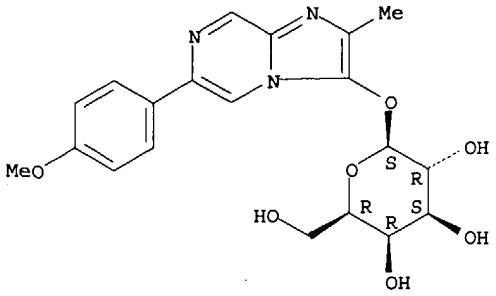
a]pyrazin-3-yl (9CI) (CA INDEX NAME)

Absolute stereochemistry.

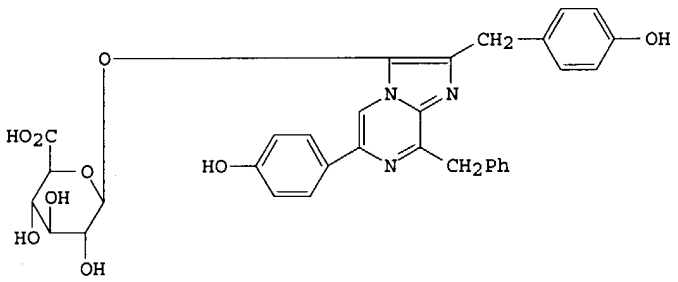


L28 ANSWER 5 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:126975 HCAPLUS
DN 122:4783
ED Entered STN: 08 Nov 1994
TI Chemiluminescent assay of .beta.-D-galactosidase using Cypridina luciferin analog: 3-(.beta.-D-galactopyranosyloxy)-6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazine
AU Mitani, Motohiro; Sakaki, Syujiro; Koinuma, Yasumi; Toya, Yoshiaki; Kosugi, Masanori
CS Tsukuba Res. Lab., NOF Corp., Ibaraki, 300-26, Japan
SO Analytical Sciences (**1994**), 10(5), 813-14
CODEN: ANSCEN; ISSN: 0910-6340
DT Journal
LA English
CC 9-10 (Biochemical Methods)
AB We prepared a new Cypridina luciferin analog, 3-(.beta.-D-galactopyranosyloxy)-6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]-pyrazine (.beta.-Gal-MCLA) which can enzymically remove galactose to produce 2-methyl-6-(4-methoxyphenyl)-3,7-dihydroimidazo[1,2-a]pyrazine-3(7H)-one(MCLA), its autoxidn. follows, providing the chemiluminescence. .beta.-Gal-MCLA was thus a useful chemiluminescent substrate for .beta.-D-galactosidase determination
ST galactosidase chemiluminescence galactopyranosyloxy methoxyphenyl methylimidazo pyrazine
IT 9031-11-2, .beta.-D-Galactosidase
RL: ANT (Analyte); ANST (Analytical study)
(chemiluminescent assay of .beta.-D-galactosidase using Cypridina luciferin analog: 3-(.beta.-D-galactopyranosyloxy)-6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazine)
IT **159503-66-9**
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(chemiluminescent assay of .beta.-D-galactosidase using Cypridina luciferin analog: 3-(.beta.-D-galactopyranosyloxy)-6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazine)
IT 144465-03-2
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(chemiluminescent assay of .beta.-D-galactosidase using Cypridina luciferin analog: 3-(.beta.-D-galactopyranosyloxy)-6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazine)
IT 118877-07-9
RL: ARU (Analytical role, unclassified); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent)
(chemiluminescent assay of .beta.-D-galactosidase using Cypridina luciferin analog: 3-(.beta.-D-galactopyranosyloxy)-6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazine)
IT **159503-66-9**
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(chemiluminescent assay of .beta.-D-galactosidase using Cypridina luciferin analog: 3-(.beta.-D-galactopyranosyloxy)-6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazine)
RN 159503-66-9 HCAPLUS
CN .beta.-D-Galactopyranoside, 6-(4-methoxyphenyl)-2-methylimidazo[1,2-a]pyrazin-3-yl (9CI) (CA INDEX NAME)

Absolute stereochemistry.



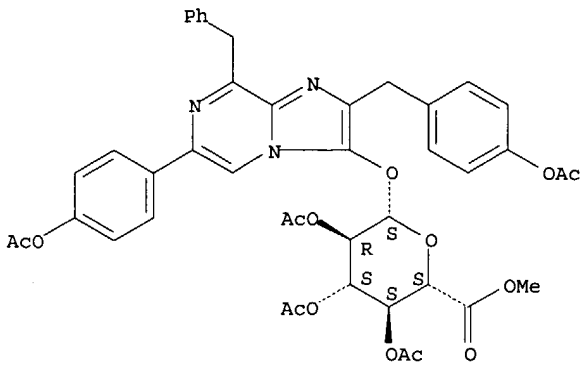
L28 ANSWER 6 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1987:153383 HCAPLUS
DN 106:153383
ED Entered STN: 15 May 1987
TI Chemical studies of myctophina fish bioluminescence
AU Inoue, Shoji; Okada, Kunisuke; Tanino, Hideo; Kakoi, Hisae
CS Fac. Pharm., Meijo Univ., Nagoya, 468, Japan
SO Chemistry Letters (1987), (2), 417-18
CODEN: CMLTAG; ISSN: 0366-7022
DT Journal
LA English
CC 12-1 (Nonmammalian Biochemistry)
Section cross-reference(s): 26
GI



I

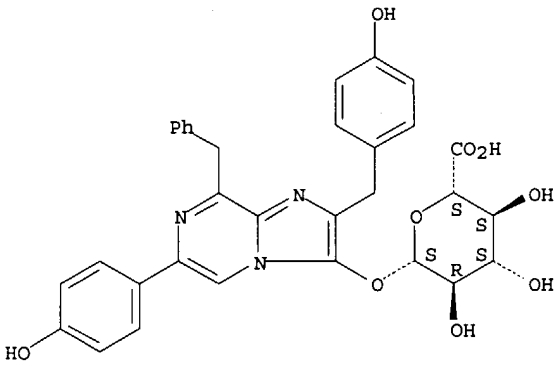
AB A new type of masked watasenia preluciferin was isolated from the liver of a myctophina fish (Diaphus elucens) and its structure was determined as watasenia preluciferyl .beta.-D-glucopyranosiduronic acid (I).
ST Diaphus liver watasenia preluciferyl glucopyranosidurate; myctophina fish watasenia preluciferyl glucopyranosidurate
IT Diaphus elucens
(watasenia preluciferyl glucopyranosidurate of liver of)
IT Liver, composition
(watasenia preluciferyl glucopyranosidurate of, of myctophina fish)
IT **107503-11-7**
RL: RCT (Reactant); RACT (Reactant or reagent)
(deacetylation of)
IT 65417-18-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(esterification of)
IT **107503-09-3**
RL: BIOL (Biological study)
(of liver, of myctophina fish)
IT 55779-48-1P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
IT **107503-11-7**
RL: RCT (Reactant); RACT (Reactant or reagent)
(deacetylation of)
RN 107503-11-7 HCAPLUS
CN .beta.-D-Glucopyranosiduronic acid, 6-[4-(acetyloxy)phenyl]-2-[[4-(acetyloxy)phenyl]methyl]-8-(phenylmethyl)imidazo[1,2-a]pyrazin-3-yl (9CI) (CA INDEX NAME)

Absolute stereochemistry.



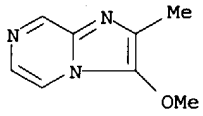
IT **107503-09-3**
RL: BIOL (Biological study)
(of liver, of myctophina fish)
RN 107503-09-3 HCAPLUS
CN .beta.-D-Glucopyranosiduronic acid, 6-(4-hydroxyphenyl)-2-[(4-hydroxyphenyl)methyl]-8-(phenylmethyl)imidazo[1,2-a]pyrazin-3-yl (9CI) (CA INDEX NAME)

Absolute stereochemistry.



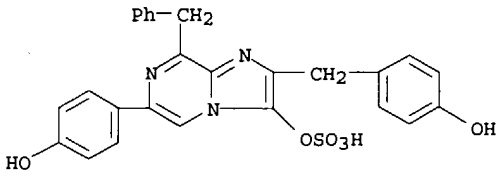
L28 ANSWER 7 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1985:55384 HCAPLUS
DN 102:55384
ED Entered STN: 09 Feb 1985
TI Carbon-13 nuclear magnetic resonance spectra in the identification of N-, O- or S-methyl derivatives of some tautomeric hydroxy and mercapto nitrogen heterocycles
AU Barlin, Gordon B.; Brown, Desmond J.; Fenn, M. David
CS John Curtin Sch. Med. Res., Aust. Natl. Univ., Canberra, 2601, Australia
SO Australian Journal of Chemistry (**1984**), 37(11), 2391-5
CODEN: AJCHAS; ISSN: 0004-9425
DT Journal
LA English
CC 80-5 (Organic Analytical Chemistry)
Section cross-reference(s): 22
AB Carbon-13 NMR spectroscopy, in contrast to 1H NMR spectroscopy, has been shown to provide a clear distinction in a variety of N heterocyclic systems between O-Me and nuclear N-Me groups. MeO groups occur in the range .delta. 53.20-61.87, nuclear N-Me groups at 34.29-49.62, and MeS groups at 12.35-14.55 for the compds. examined in CDCl3. Data for N- and O-Me derivs. of pyridin-2 and -4-ol, the corresponding pyrimidines, and some S analogs were compared with those for the unmethylated parent compds.
ST nitrogen heterocycle tautomer identification NMR; carbon 13 NMR tautomer identification
IT Tautomerism and Tautomers
(of Me derivs. of hydroxy and mercaptonitrogen heterocyclic compds.,

carbon-13 NMR identification of)
IT Spectrochemical analysis
(NMR, carbon-13, in identification of Me derivs. of tautomeric hydroxy and mercapto nitrogen heterocyclic compds.)
IT Heterocyclic compounds
RL: ANST (Analytical study)
(nitrogen, identification of Me derivs. of tautomeric hydroxy and mercapto, carbon-13 NMR spectrometric)
IT 83-54-5 142-08-5 557-01-7 620-08-6 626-64-2 694-85-9 695-19-2
823-09-6 931-63-5 1628-89-3 1722-10-7 2044-27-1 2228-30-0
2637-34-5 3739-81-9 4556-23-4 4562-27-0 6104-41-2 6104-45-6
6104-46-7 6887-59-8 18438-38-5 22581-72-2 53745-18-9 73547-86-1
79690-90-7 79690-93-0 87814-34-4 87814-37-7 **87814-38-8**
94317-79-0 94317-80-3
RL: ANST (Analytical study)
(identification of, carbon-13 NMR spectrometric)
IT **87814-38-8**
RL: ANST (Analytical study)
(identification of, carbon-13 NMR spectrometric)
RN 87814-38-8 HCAPLUS
CN Imidazo[1,2-a]pyrazine, 3-methoxy-2-methyl- (9CI) (CA INDEX NAME)



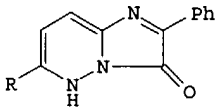
L28 ANSWER 8 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1984:468065 HCAPLUS
DN 101:68065
ED Entered STN: 01 Sep 1984
TI Mechanism of photoinactivation and re-activation in the bioluminescence system of the ctenophore Mnemiopsis
AU Anctil, Michel; Shimomura, Osamu
CS Mar. Biol. Lab., Woods Hole, MA, 02543, USA
SO Biochemical Journal (**1984**), 221(1), 269-72
CODEN: BIJOAK; ISSN: 0306-3275
DT Journal
LA English
CC 6-3 (General Biochemistry)
Section cross-reference(s): 12
AB The bioluminescence of M. leidyi takes place when the photoprotein mnemiopsin in the photocytes reacts with Ca2+. The luminescence is inhibited in sunlight and this photoinhibition is reversible by keeping the live specimens in the dark. Exts. of mnemiopsin are similarly photoinhibited, but the photoinhibition cannot be reversed in the dark. Photoinhibited mnemiopsin can be reactivated in the dark by incubation with coelenterazine and O only in solns. having a pH very close to 9.0. The reactivation in vivo probably takes place in the same manner, using the coelenterazine that is supplied from its abundant storage form. Apparently, photoinactivation of mnemiopsin results in the dissociation of coelenterazine and O from the mol. of photoprotein; the dissociated form of the former mol. is an inactive form of coelenterazine, not free coelenterazine.
ST bioluminescence Mnemiopsis photoinactivation; mnemiopsin light inactivation coelenterazine oxygen; ctenophore bioluminescence photoinactivation; luminescence bio Mnemiopsis
IT Light, biological effects
(bioluminescence of ctenophore inactivation by, reactivation by coelenterazine and oxygen in relation to)
IT Mnemiopsis leidyi
(bioluminescence of, light inactivation of, reactivation by coelenterazine and oxygen in relation to)
IT Luminescence, bio-
(of ctenophore, light inactivation of, reactivation by coelenterazine and oxygen in relation to)
IT Proteins
RL: BIOL (Biological study)
(mnemiopsins, light inactivation of, reactivation by coelenterazine and oxygen in relation to)
IT 7782-44-7, biological studies
RL: BIOL (Biological study)

(mnemiopsin activation by coelenterazine and)
IT 55779-48-1
RL: BIOL (Biological study)
(mnemiopsin activation by oxygen and)
IT 55779-48-1D, oxidized **65417-14-3**
RL: BIOL (Biological study)
(of ctenophore)
IT **65417-14-3**
RL: BIOL (Biological study)
(of ctenophore)
RN 65417-14-3 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 6-(4-hydroxyphenyl)-2-[(4-hydroxyphenyl)methyl]-8-(phenylmethyl)-, 3-(hydrogen sulfate), monosodium salt (9CI) (CA INDEX NAME)

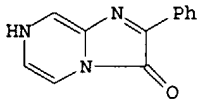


● Na

L28 ANSWER 9 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1983:594926 HCAPLUS
DN 99:194926
ED Entered STN: 12 May 1984
TI Imidazo[1,2-b]pyridazines and an imidazo[1,2-a]pyrazine from pyridazin- and pyrazinamines
AU Barlin, Gordon B.; Brown, Desmond J.; Kadunc, Zdenka; Petric, Andrej; Stanovnik, Branka; Tisler, Miha
CS John Curtin Sch. Med. Res., Canberra, 2601, Australia
SO Australian Journal of Chemistry (**1983**), 36(6), 1215-20
CODEN: AJCHAS; ISSN: 0004-9425
DT Journal
LA English
CC 28-17 (Heterocyclic Compounds (More Than One Hetero Atom))
OS CASREACT 99:194926
GI



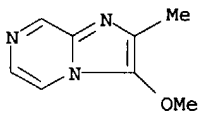
I



II

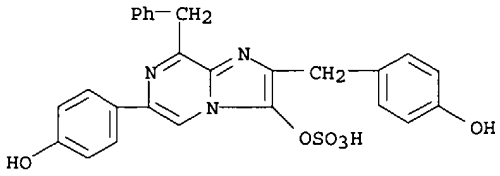
AB The ambiguous condensations of PhCOCHO with pyridazin-3-amines and pyrazin-2-amine give imidazopyridazinones I (R = H, Cl) and imidazopyrazinone II; resp. The former products exist as such, at least in the solid state, whereas the latter product exists to a large extent as the corresponding dipolar mol. The reactions, degrdns., and NMR spectra of the products are discussed.
ST imidazopyrazine; imidazopyridazine; phenylglyoxal cyclization pyridazinamine pyrazinamine
IT 6342-56-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclization of, with chloropyridinamine, imidozopyrazidine derivative)
IT 5469-69-2 5469-70-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclization of, with phenylglyoxal, imidazopyrazinone derivative from)
IT 5049-61-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclization of, with phenylglyoxal, phenylimidazolpyrazinone from)
IT 1074-12-0
RL: RCT (Reactant); RACT (Reactant or reagent)

(cyclization of, with pyridazinamines and pyrazinamines, imidazolpyrazinone and imidazopyrazinone derivs. from)
IT 87814-32-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and methylation of)
IT 87814-31-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reactions of)
IT 27955-58-4P 87814-33-3P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and ring cleavage of)
IT 87814-34-4P 87814-35-5P 87814-36-6P 87814-37-7P **87814-38-8P**
87814-39-9P 87814-40-2P 87814-41-3P 87814-42-4P 87814-43-5P
87814-44-6P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
IT **87814-38-8P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 87814-38-8 HCAPLUS
CN Imidazo[1,2-a]pyrazine, 3-methoxy-2-methyl- (9CI) (CA INDEX NAME)



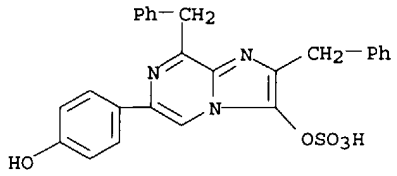
L28 ANSWER 10 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1980:107639 HCAPLUS
DN 92:107639
ED Entered STN: 12 May 1984
TI Comparison of the amounts of key components in the bioluminescence systems of various coelenterates
AU Shimomura, Osamu; Johnson, Frank H.
CS Dep. Biol., Princeton Univ., Princeton, NJ, 08540, USA
SO Comparative Biochemistry and Physiology, Part B: Biochemistry & Molecular Biology (**1979**), 64B(1), 105-7
CODEN: CBPBB8; ISSN: 0305-0491
DT Journal
LA English
CC 12-1 (Nonmammalian Biochemistry)
AB Luciferase, photoprotein, free and protein-bound coelenterazine (I) and I enol-sulfate were assayed and compared in 5 bioluminescent coelenterates. Hydrozoans Aequorea aequorea and Halistaura cellularia contained photoprotein plus very small amts. of I enol-sulfate and luciferase activity, but no free I. Anthozoans Ptilosarcus gurneyi, Cavernularia obesa, and Renilla muelleri contained luciferase, I, and I enol-sulfate, but very little or no photoprotein. I existed mainly in a stabilized form bound to a Ca-binding protein. The bioluminescent reactions in the coelenterates were compared.
ST bioluminescence coelenterate; luciferase coelenterate bioluminescence; coelenterazine coelenterate bioluminescence; photoprotein coelenterate bioluminescence
IT Aequorea aequorea
Cavernularia obesa
Coelenterate
Halistaura cellularia
Ptilosarcus gurneyi
Renilla muelleri
(bioluminescence system components of)
IT Luminescence, bio-
(in coelenterates)
IT Proteins
RL: BIOL (Biological study)
(photo-, of coelenterates, bioluminescence in relation to)
IT 9014-00-0 **55779-47-0** 55779-48-1
RL: BIOL (Biological study)
(of coelenterates, bioluminescence in relation to)
IT **55779-47-0**

RL: BIOL (Biological study)
(of coelenterates, bioluminescence in relation to)
RN 55779-47-0 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 6-(4-hydroxyphenyl)-2-[(4-hydroxyphenyl)methyl]-8-(phenylmethyl)-, 3-(hydrogen sulfate) (9CI) (CA INDEX NAME)



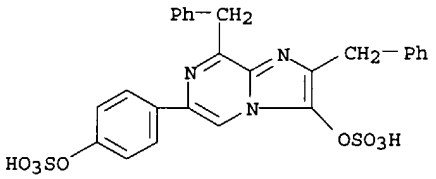
L28 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1979:519858 HCAPLUS
DN 91:119858
ED Entered STN: 12 May 1984
TI A Bioluminescence assay for PAP (3',5'-diphosphoadenosine) and PAPS (3'-phosphoadenylyl sulfate
AU Anderson, James Michael; Hori, Kazuo; Cormier, Milton J.
CS Boyd Grad. Stud. Res. Cent., Univ. Georgia, Athens, GA, 30602, USA
SO Methods in Enzymology (**1978**), 57(Biolumin. Chemilumin.), 244-57
CODEN: MENZAU; ISSN: 0076-6879
DT Journal
LA English
CC 9-6 (Biochemical Methods)
AB Procedures in the bioluminescence assay of PAP and PAPS using the luciferin-luciferase reaction in Renilla reniformis are described. The assay is sensitive to 0.1 pmol of PAP. The synthesis of the substrate benzyl luciferyl sulfate and isolation of luciferin sulfokinase and luciferase are also described.
ST diphosphoadenosine detn bioluminescence assay; PAPS detn bioluminescence
IT Spinach
(diphosphoadenosine and PAPS determination in leaves of, bioluminescence assay for)
IT Heart, composition
Kidney, composition
Liver, composition
Lung, composition
Photobacterium fischeri
(diphosphoadenosine and PAPS determination in, bioluminescence assay for)
IT Potato
(diphosphoadenosine and PAPs determination in tubers of, bioluminescence assay for)
IT Renilla reniformis
(luciferase and luciferin sulfokinase isolation from, for diphosphoadenosine and PAPS bioluminescence assay)
IT 71369-26-1
RL: ANST (Analytical study)
(condensation of, with aminobenzylmethoxyphenylpyrazine Me ether)
IT 40040-81-1
RL: ANST (Analytical study)
(condensation of, with benzyl glyoxal di-Et acetal)
IT 482-67-7 1053-73-2
RL: ANT (Analyte); ANST (Analytical study)
(determination of, bioluminescence assay for)
IT 9014-00-0 37278-33-4
RL: PROC (Process)
(isolation of, of Renilla reniformis for diphosphoadenosine and PAPS bioluminescence assay)
IT 50909-83-6P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and demethylation of)
IT **71369-28-3P**
RL: PREP (Preparation)
(preparation of, as substrate for diphosphoadenosine and PAPS bioluminescence assay)
IT **71369-27-2**
RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, with aryl sulfatase)
IT 9016-17-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with benzyl luciferyl disulfate)
IT 50909-86-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(sulfonation of)
IT **71369-28-3P**
RL: PREP (Preparation)
(preparation of, as substrate for diphosphoadenosine and PAPS bioluminescence assay)
RN 71369-28-3 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 6-(4-hydroxyphenyl)-2,8-bis(phenylmethyl)-, 3-(hydrogen sulfate), monopotassium salt (9CI) (CA INDEX NAME)



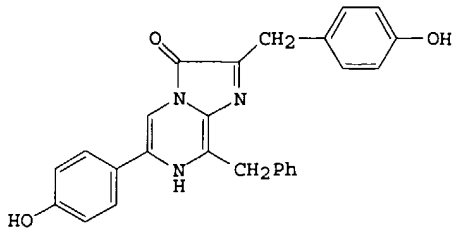
● K

IT **71369-27-2**
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with aryl sulfatase)
RN 71369-27-2 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 2,8-bis(phenylmethyl)-6-[4-(sulfooxy)phenyl]-, hydrogen sulfate (ester), dipotassium salt (9CI) (CA INDEX NAME)

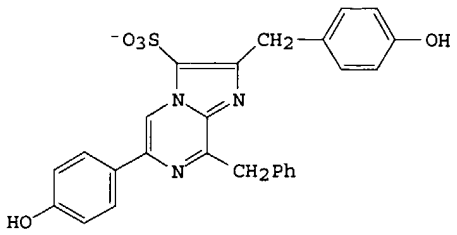


●2 K

L28 ANSWER 12 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1978:50764 HCAPLUS
DN 88:50764
ED Entered STN: 12 May 1984
TI Complete structure of Renilla luciferin and luciferyl sulfate
AU Inoue, Shoji; Kakoi, Hisae; Murata, Mikiko; Goto, Toshio; Shimomura, Osamu
CS Fac. Pharm., Meijo Univ., Nagoya, Japan
SO Tetrahedron Letters (1977), (31), 2685-8
CODEN: TELEAY; ISSN: 0040-4039
DT Journal
LA English
CC 28-16 (Heterocyclic Compounds (More Than One Hetero Atom))
GI



I



II

AB Examination of Renilla exts. showed that Renilla luciferin is coelenterazine (I). The structure of natural luciferyl sulfate was determined as II by comparison of natural and synthetic II. II was synthesized from I by sequential treatment with (AcO)2O, MeOH/NH3, and pyridine-SO3 complex and hydrolysis with MeOH/NaOH.

ST Renilla luciferin structure; luciferyl sulfate Renilla prepn

IT **65417-16-5P 65417-17-6P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and hydrolysis of)

IT **65417-14-3P**
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation and structure of)

IT 65417-18-7P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and sulfonation of)

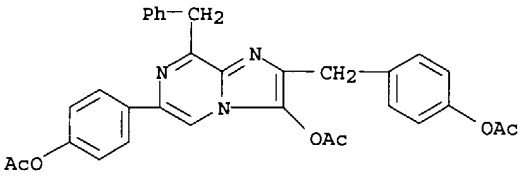
IT 61369-28-6P **65417-15-4P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

IT 55779-48-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(structure, sulfonylation, and acetylation of)

IT **65417-16-5P 65417-17-6P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and hydrolysis of)

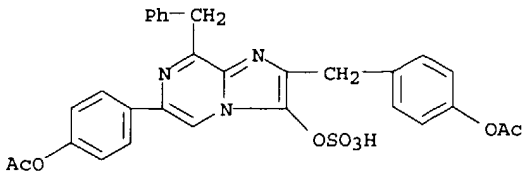
RN 65417-16-5 HCAPLUS

CN Imidazo[1,2-a]pyrazin-3-ol, 6-[4-(acetyloxy)phenyl]-2-[[4-(acetyloxy)phenyl]methyl]-8-(phenylmethyl)-, acetate (ester) (9CI) (CA INDEX NAME)



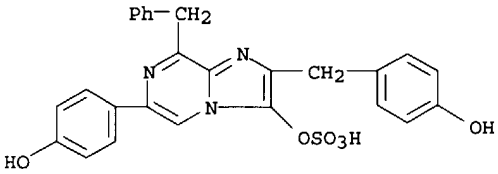
RN 65417-17-6 HCAPLUS

CN Imidazo[1,2-a]pyrazin-3-ol, 6-[4-(acetyloxy)phenyl]-2-[[4-(acetyloxy)phenyl]methyl]-8-(phenylmethyl)-, hydrogen sulfate (ester), sodium salt (9CI) (CA INDEX NAME)



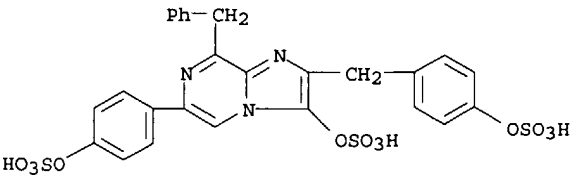
● Na

IT **65417-14-3P**
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation and structure of)
RN 65417-14-3 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 6-(4-hydroxyphenyl)-2-[(4-hydroxyphenyl)methyl]-8-(phenylmethyl)-, 3-(hydrogen sulfate), monosodium salt (9CI) (CA INDEX NAME)



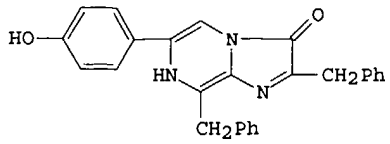
● Na

IT **65417-15-4P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 65417-15-4 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 8-(phenylmethyl)-6-[4-(sulfooxy)phenyl]-2-[[4-(sulfooxy)phenyl]methyl]-, hydrogen sulfate (ester), trisodium salt (9CI) (CA INDEX NAME)



●3 Na

L28 ANSWER 13 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1977:596264 HCAPLUS
DN 87:196264
ED Entered STN: 12 May 1984
TI Substrate and substrate analog binding properties of Renilla luciferase
AU Matthews, John C.; Hori, Kazuo; Cormier, Milton J.
CS Dep. Biochem., Univ. Georgia, Athens, GA, USA
SO Biochemistry (1977), 16(24), 5217-20
CODEN: BICHAW; ISSN: 0006-2960
DT Journal
LA English
CC 7-3 (Enzymes)
GI



I

AB The binding characteristics of luciferin, luciferin analogs (e.g. I), and competitive inhibitors of the luciferin-luciferase reaction were studied. Luciferin binding and orientation in the single luciferin binding site of luciferase from R. reniformis are highly specific for and dependent upon the 3 group substituents of the luciferin mol., whereas the imidazolone-pyrazine nucleus of luciferin is not directly involved in binding. Anaerobic luciferin binding promotes a rapid concentration-dependent aggregation of luciferase which results in irreversible inactivation of the enzyme. This aggregation phenomenon is not observed upon binding of oxyluciferin, luciferyl sulfate, or luciferin analogs in which the substituent at the 2 position of the imidazolone-pyrazine ring has been substantially altered.

ST luciferase substrate analog binding; Renilla luciferase substrate binding

IT Renilla reniformis
(luciferase of, inhibitor and substrate binding by)

IT Kinetics, enzymic
(of inhibition, of luciferase)

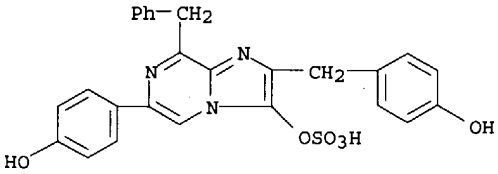
IT 51-67-2 100-46-9, reactions 103-49-1 104-94-9 108-88-3, reactions 108-95-2, reactions 6373-46-2 17297-75-5 19943-97-6 37156-84-6 40040-83-3 50909-85-8 50909-86-9 **55779-47-0** 55779-48-1 64750-82-9 **64750-83-0** 64750-84-1
RL: PROC (Process)
(luciferase binding of, structural factors in)

IT 9014-00-0
RL: BIOL (Biological study)
(of Renilla, inhibitor and substrate binding by, structural factors in)

IT **55779-47-0 64750-83-0**
RL: PROC (Process)
(luciferase binding of, structural factors in)

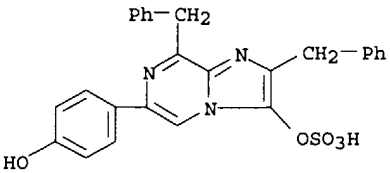
RN 55779-47-0 HCAPLUS

CN Imidazo[1,2-a]pyrazin-3-ol, 6-(4-hydroxyphenyl)-2-[(4-hydroxyphenyl)methyl]-8-(phenylmethyl)-, 3-(hydrogen sulfate) (9CI) (CA INDEX NAME)



RN 64750-83-0 HCAPLUS

CN Imidazo[1,2-a]pyrazin-3-ol, 6-(4-hydroxyphenyl)-2,8-bis(phenylmethyl)-, 3-(hydrogen sulfate) (9CI) (CA INDEX NAME)



L28 ANSWER 14 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN

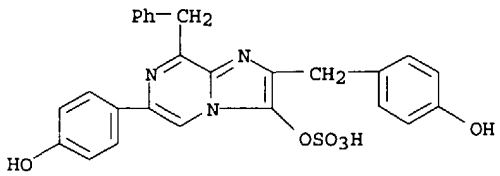
AN 1975:405600 HCAPLUS

DN 83:5600

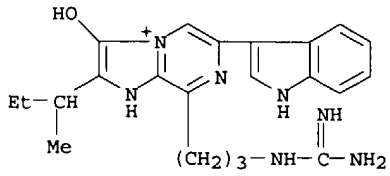
ED Entered STN: 12 May 1984

TI Chemical nature of bioluminescence systems in coelenterates

AU Shimomura, Osamu; Johnson, Frank H.
CS Dep. Biol., Princeton Univ., Princeton, NJ, USA
SO Proceedings of the National Academy of Sciences of the United States of America (1975), 72(4), 1546-9
CODEN: PNASA6; ISSN: 0027-8424
DT Journal
LA English
CC 12-13 (Nonmammalian Biochemistry)
AB Anal. of substances involved in light-emitting reactions among bioluminescent coelenterates revealed a pronounced uniformity in the structural features of initial reactants, i.e., luciferins and photoprotein chromophores, as well as the light-emitter product. This product is structurally identical among the different classes of coelenterates; i.e., Hydrozoa (the jellyfish, Aequorea), Anthozoa (the sea cactus, Cavernularia; sea pansy, Renilla; and sea pen, Leioptilus), and very likely also the Scyphozoa (the jellyfish, Pelagia). In each of these instances the reaction product, 2-(p-hydroxyphenylacetyl)amino-3-benzyl-5-(p-hydroxyphenyl) pyrazine, is the actual light-emitter, whether it occurs in a Ca2+-triggered photoprotein type of luminescence or in a luciferin-luciferase type. The evidence indicates that in certain coelenterates, e.g., Cavernularia, these 2 types are equally significant, whereas in others (Renilla and Leioptilus) the luciferin-luciferase type predominates over the Ca-triggerable photoprotein type. Only the photoprotein type functions in the luciferaseless jellyfish, Aequorea. In all instances investigated, the structure of the light-emitter prior to the luminescence reaction appears to be essentially the same as that of the chromophore of unreacted aequorin. The product of the luminescence reaction is absent in exts. of nonluminous species. However, a product very similar to that of luminescent coelenterates occurs also in representatives of other phyla, including the cephalopod molluscs, e.g., the "firefly squid" Watasenia and probably various ctenophores as well.
ST bioluminescence coelenterate hydroxyphenylacetylaminobenzylhydroxyphenyl pyrazine; pyrazine deriv bioluminescence coelenterate
IT Luminescence
(bio-, of coelenterates, (hydroxyphenylacetyl)aminobenzyl(hydroxyphenyl) pyrazine in)
IT Aequorea aequorea
Cavernularia obesa
Coelenterate
Leioptilus
Leptogorgia virgulate
Renilla
(bioluminescence of, (hydroxyphenylacetyl)aminobenzyl(hydroxyphenyl) pyrazine in)
IT Nomenclature, new natural products
(coelenteramide)
IT Nomenclature, new natural products
(coelenterazine)
IT Luciferins
RL: BIOL (Biological study)
(sulfate, of bioluminescence species, product of)
IT 50611-86-4 55779-48-1
RL: BIOL (Biological study)
(in bioluminescence, in coelenterates)
IT 37156-84-6 **55779-47-0**
RL: BIOL (Biological study)
(in calcium-induced luminescence of coelenterates)
IT **55779-47-0**
RL: BIOL (Biological study)
(in calcium-induced luminescence of coelenterates)
RN 55779-47-0 HCAPLUS
CN Imidazo[1,2-a]pyrazin-3-ol, 6-(4-hydroxyphenyl)-2-[(4-hydroxyphenyl)methyl]-8-(phenylmethyl)-, 3-(hydrogen sulfate) (9CI) (CA INDEX NAME)



L28 ANSWER 15 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1973:145460 HCAPLUS
DN 78:145460
ED Entered STN: 12 May 1984
TI Exchange of oxygen between solvent water and the carbon dioxide produced in Cypridina bioluminescence
AU Shimomura, Osamu; Johnson, Frank H.
CS Biol. Dep., Princeton Univ., Princeton, NJ, USA
SO Biochemical and Biophysical Research Communications (1973), 51(3), 558-63
CODEN: BBRCA9; ISSN: 0006-291X
DT Journal
LA English
CC 12-2 (Nonmammalian Biochemistry)
AB Bioluminescent oxidation of Cypridina luciferin yields CO2 besides oxyluciferin and light. The exchange of O between the CO2 and H2O of the solvent becomes significant when <1.mu.mole of luciferin is reacted in 4 ml of buffer solution, and the exchange O in CO2 markedly increases by decreasing the amount of luciferin. Such an exchange is to be expected in any such system which produces CO2 in aqueous solution, and must be taken in to account in interpreting the results of expts.
ST luciferin oxidn bioluminescence; Cypridina bioluminescence
IT Luminescence
(bio-, luciferin oxidation in)
IT Cypridina
(luminescence of, oxygen exchange between carbon dioxide and water in)
IT Exchange reaction
(of oxygen, between carbon dioxide and water in Cypridina bioluminescence)
IT 7782-44-7, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(exchange reaction of, between carbon dioxide and water in Cypridina bioluminescence)
IT 7732-18-5
RL: BIOL (Biological study)
(exchange reactions of oxygen in, with carbon dioxide, in Cypridina bioluminescence)
IT 124-38-9, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(exchange reactions of oxygen in, with water, in Cypridina bioluminescence)
IT **26008-71-9**
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, in bioluminescence)
IT **26008-71-9**
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, in bioluminescence)
RN 26008-71-9 HCAPLUS
CN 1H-Imidazo[1,2-a]pyrazin-4-ium, 8-[3-[(aminoiminomethyl)amino]propyl]-3-hydroxy-6-(1H-indol-3-yl)-2-(1-methylpropyl)-, bromide, monohydrobromide (9CI) (CA INDEX NAME)

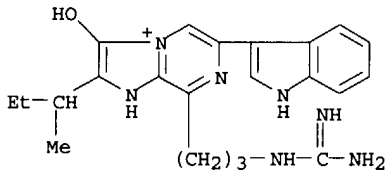


● Br^-

● HBr

L28 ANSWER 16 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1970:432730 HCAPLUS

DN 73:32730
ED Entered STN: 12 May 1984
TI Chemistry of bioluminescence
AU Goto, Toshio
CS Dep. Agr. Chem., Nagoya Univ., Nagoya, Japan
SO Pure and Applied Chemistry (**1968**), 17(3-4), 421-41
CODEN: PACHAS; ISSN: 0033-4545
DT Journal; General Review
LA English
CC 9 (Nonmammalian Biochemistry)
AB The bioluminescence kinetics and mechanisms of Cypridina hilgendorfii luciferin and related compds. is reviewed. 40 refs.
ST Cypridina bioluminescence review; bioluminescence kinetics; kinetics bioluminescence; luciferin luciferase kinetics; review bioluminescence luciferin
IT Luminescence
(bio-, of Cypridina hilgendorfi)
IT Cypridina
(hilgendorfii, bioluminescence of)
IT **26008-71-9**
RL: PRP (Properties)
(bioluminescence of, of Cypridina hilgendorfii)
IT **26008-71-9**
RL: PRP (Properties)
(bioluminescence of, of Cypridina hilgendorfii)
RN 26008-71-9 HCAPLUS
CN 1H-Imidazo[1,2-a]pyrazin-4-ium, 8-[3-[(aminoiminomethyl)amino]propyl]-3-hydroxy-6-(1H-indol-3-yl)-2-(1-methylpropyl)-, bromide, monohydrobromide (9CI) (CA INDEX NAME)

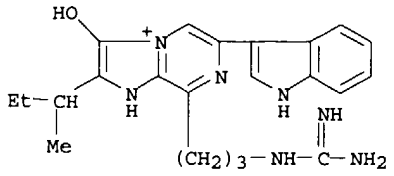


● Br^-

● HBr

L28 ANSWER 17 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1970:107330 HCAPLUS
DN 72:107330
ED Entered STN: 12 May 1984
TI Enzyme catalyzed oxidation of Cypridina luciferin
AU Stone, Henry
CS Princeton Univ., Princeton, NJ, USA
SO (**1969**) 80 pp. Avail.: 69-14,438
From: Diss. Abstr. Int. B 1969, 30(3), 1020-1
DT Dissertation
LA English
CC 3 (Enzymes)
AB Unavailable
ST Cypridina luciferin oxidn; luciferin enzymic oxidn
IT Enzymes
RL: BIOL (Biological study)
(luciferin-oxidizing, of Cypridina)
IT **26008-71-9**
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, enzymic)
IT **26008-71-9**
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, enzymic)
RN 26008-71-9 HCAPLUS
CN 1H-Imidazo[1,2-a]pyrazin-4-ium, 8-[3-[(aminoiminomethyl)amino]propyl]-3-

hydroxy-6-(1H-indol-3-yl)-2-(1-methylpropyl)-, bromide, monohydrobromide (9CI) (CA INDEX NAME)



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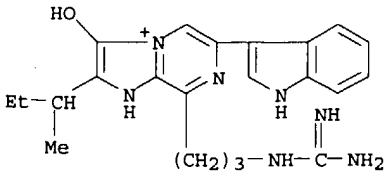
L28 ANSWER 18 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1970:62631 HCAPLUS
DN 72:62631
ED Entered STN: 12 May 1984
TI Bioluminescence and mechanism of luminescence
AU Got, Toshio
CS Nagoya Univ., Nagoya, Japan
SO Kagaku to Seibutsu (**1969**), 7(8), 445-51
CODEN: KASEAA; ISSN: 0453-073X
DT Journal; General Review
LA Japanese
CC 2 (General Biochemistry)
AB A review. Mechanism of chemiluminescence was outlined with special reference to the formation of an intermediate hydroperoxide anion and its decomposition through 4-membered ring peroxide into carbonyl compound in singlet excited state, and illustrated by Cypridina luciferin. 28 refs.
ST bioluminescence review; review bioluminescence; luminescence review
IT Luminescence
(bio-, mechanism of)
IT **26008-71-9**
RL: PRP (Properties)
(luminescence of, mechanism of)
IT **26008-71-9**
RL: PRP (Properties)
(luminescence of, mechanism of)
RN 26008-71-9 HCAPLUS
CN 1H-Imidazo[1,2-a]pyrazin-4-ium, 8-[3-[(aminoiminomethyl)amino]propyl]-3-hydroxy-6-(1H-indol-3-yl)-2-(1-methylpropyl)-, bromide, monohydrobromide (9CI) (CA INDEX NAME)



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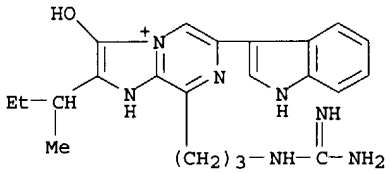
L28 ANSWER 19 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1968:46251 HCAPLUS
DN 68:46251
ED Entered STN: 12 May 1984
TI Bioluminescence. Cypridina luciferin
AU Hirata, Yoshimasa; Goto, Toshio
CS Nagoya Univ., Nagoya, Japan
SO Kagaku (Tokyo, Japan) (**1967**), 37(12), 640-6
CODEN: KAGTAT; ISSN: 0022-7625
DT Journal
LA Japanese
CC 2 (General Biochemistry)
GI For diagram(s), see printed CA Issue.
AB The scheme of bioluminescence reaction of luciferin can be represented: luciferin + O2 -(luciferase).fwdarw. oxyluciferin +hv. Oxyluciferin was gradually decomposed to etioluciferin (I). From further studies on the structure of luciferin, the new structure II was proposed. Attempts to synthesize II gave a very poor yield.
ST BIOLUMINESCENCE LUCIFERIN; ETIOLUCIFERIN; LUCIFERIN STRUCTURE ACTION; LUMINESCENCE LUCIFERIN
IT Luminescence
(bio-, of luciferin, intermediates in)
IT Cypridina
(luciferin of, bioluminescence of, intermediates in)
IT Molecular structure
(of luciferin)
IT **19321-05-2**
RL: BIOL (Biological study)
(luciferin (cypridina) identity with)
IT **19321-05-2**
RL: BIOL (Biological study)
(luciferin (cypridina) identity with)
RN 19321-05-2 HCAPLUS
CN 1H-Imidazo[1,2-a]pyrazin-4-ium, 2-sec-butyl-8-(3-guanidinopropyl)-3-hydroxy-6-indol-3-yl-, bromide, monohydrobromide (8CI) (CA INDEX NAME)



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L28 ANSWER 20 OF 20 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1967:432674 HCAPLUS
DN 67:32674
ED Entered STN: 12 May 1984
TI Structure of Cypridina luciferin
AU Kishi, Yoshito; Goto, Toshio; Hirata, Yoshimasa; Shimomura, Osamu; Johnson, Frank Harris
CS Fac. Sci., Nagoya Univ., Nagoya, Japan
SO Biolumin. Prog., Proc. Conf. (**1966**), Meeting Date 1965, 89-113
CODEN: 16HSAG
DT Conference
LA English
CC 28 (Heterocyclic Compounds (More Than One Hetero Atom))
GI For diagram(s), see printed CA Issue.
AB Luciferin yields oxyluciferin (I) and etioluciferin (II) when treated with luciferase-O or NH3-O. The former can be converted to the latter by acid treatment. Treatment of II with Ba(OH)2 gives etioluciferamine. N.M.R. spectra and high-resolution mass spectra as well as chemical data confirm the structures of these compds. On the basis of structure II, the structure I can be assigned to oxyluciferin. The structure III is assigned to

luciferin hydrobromide and IV to luciferin hydrochloride. These structures comprise tryptamine, arginine, and isoleucine moieties.

ST STRUCTURE CYPRIDINA LUCIFERIN; LUCIFERIN CYPRIDINA STRUCTURE; ARGININE; ISOLEUCINE; ETIOLUCIFERIN; CYPRIDINA LUCIFERIN STRUCTURE

IT Cypridina
(luciferin of, structure of)

IT 1H-Imidazo[1,2-a]pyrazin-4-ium, 2-sec-butyl-8-(3-guanidinopropyl)-3-hydroxy-6-indol-3-yl-, hydroxide
Guanidine, [3-(2-sec-butyl-3,7-dihydro-6-indol-3-yl-3-oxoimidazo[1,2-a]pyrazin-8-yl)propyl]-
RL: RCT (Reactant); RACT (Reactant or reagent)
(as structure of luciferin)

IT Luciferin
Luciferin, bromide, hydrobromide
Luciferin, hydroxide
RL: PRP (Properties)
(structure of)

IT 7256-95-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(as structure of etioluciferamine)

IT 7269-75-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(as structure of etioluciferin)

IT **19321-05-2**
RL: RCT (Reactant); RACT (Reactant or reagent)
(as structure of luciferin hydrobromide)

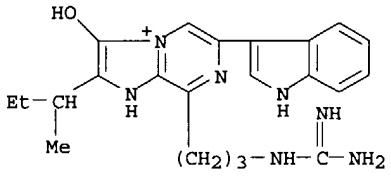
IT 10104-19-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(as structure of oxyluciferin)

IT 7256-95-3 7269-75-2 17297-78-8
RL: PRP (Properties)
(structure of)

IT **19321-05-2**
RL: RCT (Reactant); RACT (Reactant or reagent)
(as structure of luciferin hydrobromide)

RN 19321-05-2 HCAPLUS

CN 1H-Imidazo[1,2-a]pyrazin-4-ium, 2-sec-butyl-8-(3-guanidinopropyl)-3-hydroxy-6-indol-3-yl-, bromide, monohydrobromide (8CI) (CA INDEX NAME)



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